Program Manager for Training Systems

Products & Services Information Handbook

PM TRAINING SYSTEMS
SEMPER FIDELIS
MARCORSYSCOM

November 2006

U.S. MARINES

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From the Front Office

Colonel Walter Augustin
Program Manager for Training Systems

Mr. Daniel Torgler
Deputy Program Manager for Training Systems

Welcome to the fourth edition of the PM Training Systems (PM TRASYS) Products and Services Information Handbook. The PM TRASYS team remains committed to providing superior training systems, products and services to our customers. This handbook continues to advance as a relevant and ready reference to assist with your training systems and services management requirements. This latest edition has been expanded to reflect our evolving organizational structure and our growing portfolio of military training capabilities.

We hope that you find this handbook to be an effective information resource and that you refer to it often in support of your respective training systems management requirements. Please share this document with others who have an interest in our unique mission and the many products and services we provide in support of our Marines. We remain committed to enhancing this handbook to better meet the needs of the Marine Corps training community. We welcome your comments and recommendations as to how we can continue to improve and expand this document.

These are dynamic times throughout the military training and education enterprise. The DoD's ongoing commitment to Training Transformation continues to provide us with unprecedented opportunities and resources to continue to enhance our live, virtual, and constructive training systems and ranges as well as our Advanced Distributed Learning infrastructure and capabilities. Your PM TRASYS team stands ready to fulfill your training needs.

Colonel W.H. Augustin
Program Manager, Training Systems

Mr. Daniel O. Torgler
Deputy Program Manager, Training Systems

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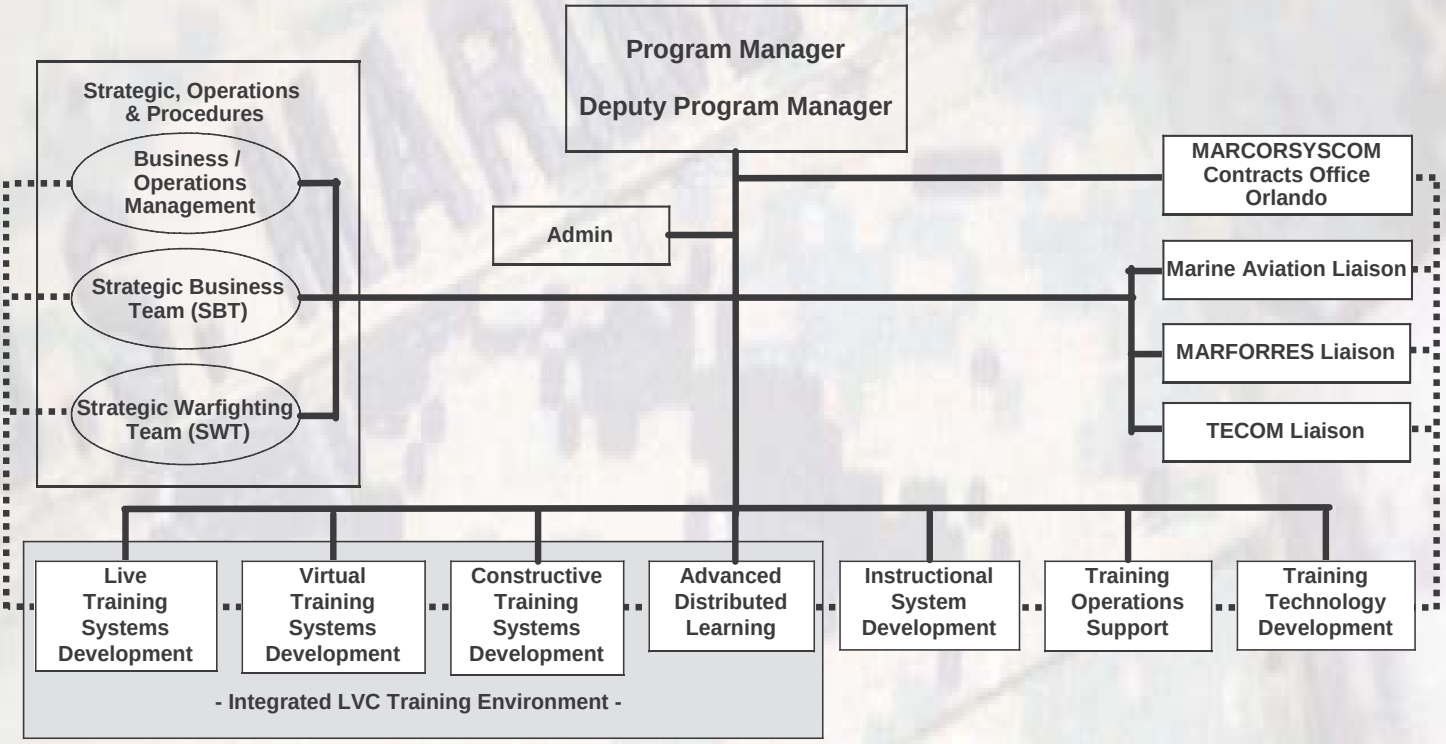
PM TRASYS
Chain of Command



The Program Manager for Training Systems (PM TRASYS) is the Marine Corps Systems Command's independent Program Manager assigned the responsibility to provide products and services to support the development and life cycle sustainment of USMC training and training systems. Further, PM TRASYS provides various types of training analyses including Manpower and Training Analyses in support of Marine Corps acquisition programs.

Mission and Vision

Mission: To serve as the Marine Corps' center of excellence for providing training solutions to our Marines in a way that enables them to effectively accomplish their mission.

Vision: To be the recognized leader in providing training solutions to develop and enhance the performance of Marines.

Organization

To accomplish our mission, PM TRASYS is staffed with professionals of the following disciplines: program management; instructional system design; systems, software, and facilities engineering; logistics; contract management; budget and financial management; business operations; and administrative support.

The personnel at PM TRASYS hold over 35 Baccalaureate Degrees, 15 Master Degrees and 1 Doctorate Degrees in the areas of Engineering, Psychology, Business, Management and Education.

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PM TRASYS Functional Areas

Business and Operations Management

The Business and Operations Office is the entry point to PM TRASYS for customers, sponsors and industry partners. The Business Office has established a central telephone line (407-381-8762), e-mail address (pmtrasys@usmc.mil) and website (www.marcorsyscom.usmc.mil then select "TRASYS") to support communications and to more easily direct your requests to the proper personnel within PM TRASYS.

The Business and Operations Office provides strategic planning and resourcing of programs, including business development, POM efforts, support services and staffing. The Business and Operations Office is the advisor to the front office on issues affecting operations and to the Assistant Program Managers (APMs) and their project teams in the performance of acquisition related duties. It is also the mechanism to support the day to day operations, including NMCI, Integrated Data Environment, Inventory control, website management, organization and communication of management policies, procedures and objectives and the coordination of request for information (internal and external to the command). The Business and Operations office also coordinates and facilitates leveraging efforts between the "Team Orlando" service partners.

To learn more on how to work with the PM TRASYS, visit our website which provides a general overview of PM TRASYS; descriptions of the product and service lines supported by each Assistant Program Manager (APM); News and Events; and Business Opportunities. Under the News and Events section you can download a copy of "Doing Business with Marine Corps Systems Command Program Manager for Training Systems" guide. This guide will help answer frequently asked questions on how to do business with our office and items of interest to our industry.

Budget and Financial Management

The PM TRASYS Budget and Financial Management Team is a dedicated focal point for all the financial requirements and the coordination of all financial actions. The team performs oversight and support for research, development, acquisition and life cycle management of training systems. The financial team influences plans, implements, directs and coordinates the financial activities and resources of a broad range of appropriations for training and training systems, business functions, and administrative costs. The financial team exercises control over all funds allocated and serves as the technical expert in the areas of financial management and accounting. The team provides PM TRASYS with management oversight and expert advisory support for making decisions regarding the financial management aspects of the complex training systems and equipment for USMC and other customers within DoD, this allows the PM to make sound program decisions, assess the accomplishments and progress of the programs.

Contracting and Contracts Management

The PM TRASYS Contracting Team is delegated their procurement authority from the Head Contracting Authority (HCA) at Marine Corps Systems Command. The PM TRASYS Contracting Team is a full service, cradle-to-grave contracting section, performing all contracting functions for PM TRASYS from requirement concept to contract closeout. The team not only performs contracting

functions but also negotiates memorandums of understanding, agreements, small purchases, Broad Agency Agreements (BAA), General Services Administration (GSA) Orders, Foreign Contracts (Foreign Comparative Tests/Foreign Military Sales) and more. All contract actions are advertised in the Federal Business Opportunities (FedBizOpps) website www.eps.gov. All interested parties are then directed to the PM TRASYS Business Opportunities website for contracting documents (i.e. SOW/SOO's, RFP's, RQI's, etc.). The PM TRASYS website and Business Opportunities page can be found at the Marine Corps Systems Command website, www.marcorsyscom.usmc.mil, select "TRASYS" then select "Business Opportunities"

Facilities Engineering

The PM TRASYS Training Facilities Engineering Team reviews and analyzes training system facility requirements and oversees the implementation of these requirements into adequately designed and constructed facilities. The team develops square footage requirements, prepares preliminary facility layouts, facility cost estimates and budget submissions for MILCON (Military Construction) and Special Projects, to fulfill the facility requirements for training systems procured by PM TRASYS. The facilities team tracks these projects to ensure all facility requirements are identified and adequately funded. The team reviews program objectives, identifies deficiencies and recommends corrective actions on established programs. The facility team monitors and evaluates both the training systems contractor and building contractors performance in fulfilling facility requirements in prime acquisition contracts and design/construction contracts. In addition, the facility team reviews and evaluates proposed training system changes to insure that all facility requirements affected by the proposed changes are identified, priced, funded, planned and implemented consistent with the program objectives.

One example of a MILCON the PMTRASYS Facilities Engineering Team recently completed is the Assault Amphibian School for the new EFV's and associated Training Systems and Simulators. The PMTRASYS Facility Engineering Team under direction from the EFV

Program Office was involved with this project from start to finish. They started in 1998 developing the initial square footage requirements to support the new EFV and all the training systems and then prepared the preliminary facility

layout & site plan and cost estimate. The project was then briefed to HQMC and included in the MILCON budget. They actively participated in all the Architectural Design Reviews for the Facility, performed Construction Inspections and tracked the procurement of all the Collateral Equipment and Furnishings to completely outfit this $22 million facility. See photos below.

Instructional Systems Development

The Primary function of the PM TRASYS Instructional Systems Specialists is to provide Instructional Systems support for PM TRASYS Assistant Program Managers and TECOM and to provide Instructional Systems related process development support to MARCORSYSCOM. We conduct Front End Analyses to include: Training Situation Analyses, Manpower Training and Personnel Analyses, Job Tasks Analyses, Training Systems Functional Description Documents, and Special Use Analyses as requested.

Logistics Management

As a core discipline of the systems acquisition process, the primary objective of logistics is to ensure a structured, comprehensive framework exists to enable the integration of product support considerations throughout the acquisition and life cycle sustainment of Live, Virtual and Constructive training systems. A synopsis of PM TRASYS Logistics and Product Support capabilities are as follows:

- Maintenance Planning
- Manpower & Personnel
- Supply Support
- Support Equipment
- Training & Support
- Technical Data

- Computer Resources Support
- Facilities (see facilities engineering section)
- Packaging, Handling, Storage & Transportation
- Life Cycle Sustainment
- Inventory Management
- Configuration Management and Status Accounting
- Data Management
- Engineering Drawings and Technical Publications Management

Logistics has two primary initiatives:

The first is to influence system and equipment design. This initiative is designed to increase level of supportability of emerging training system through the proper combination and analysis of specific product support elements listed above. For legacy systems, the focus is on support system capability and effectiveness. A fully integrated system of design and logistics elements can be measure by period of high usage and availability.

The second is adopting the best logistics business practices available. Providing education, direction, and guidance on key initiatives like Performance Based Logistics and Total Life Cycle Systems Management lays the foundation for a well-organized and competent workforce. The payout is improved logistics responsiveness that is delivered consistently and reliably to shareholders and customers.

Ultimately, all logistics efforts should lead to the delivery of high quality, cost-effective training and training systems that maximize availability and readiness, while reducing total ownership costs.

Training Technology Development

The PM TRASYS Assistant Program Manager for Training Technology Development Team performs research and provides the technical management for technology development activities that are of interest to future Marine Corps training system acquisition programs. PM TRASYS serves as a United States Special Operations Command (USSOCOM) sponsored Technology Development Agent (TDA) managing both Applied Research (6.2) and Advanced Technology Development (6.3) activities. The research and development team supports the Live, Virtual and Constructive Simulation Assistant Program Managers by developing capabilities to fill future training systems capability gaps. The applied research performed gives USSOCOM and PM TRASYS the ability to focus scientific knowledge on their training capability requirements. The advanced technologies developments allows USSOCOM and PM TRASYS to assess the feasibility and effectiveness of new technology applications towards meeting their training capability requirements. Ultimately, the objective of the training technology development team is to provide incremental capability improvements for Marine Corps Ground Training Systems via the insertion of training technology enhancements.

Systems and Software Engineering

The PM TRASYS Systems and Software Engineering (SSE) Team provides a wide and diverse range of engineering support to PM TRASYS. This support includes systems and software engineering expertise, and services to project teams involving in acquisition, development, and life cycle support of USMC training systems. The SSE team prepares training systems requirements and specifications, statement of work, and other contractual documentations in support of the acquisition process of training systems. The SSE Team provides government oversight to the development effort, assists in the development and integration tests, assesses design for safety, security and interoperability, and conducts government acceptance tests. The SSE Team maintains a high level of technical expertise in the areas of Live, Virtual and Constructive simulations, Position Location Information systems, Tactical Engagement Simulation systems, E-Learning, Gaming Technology, High Level Architecture and software engineering.

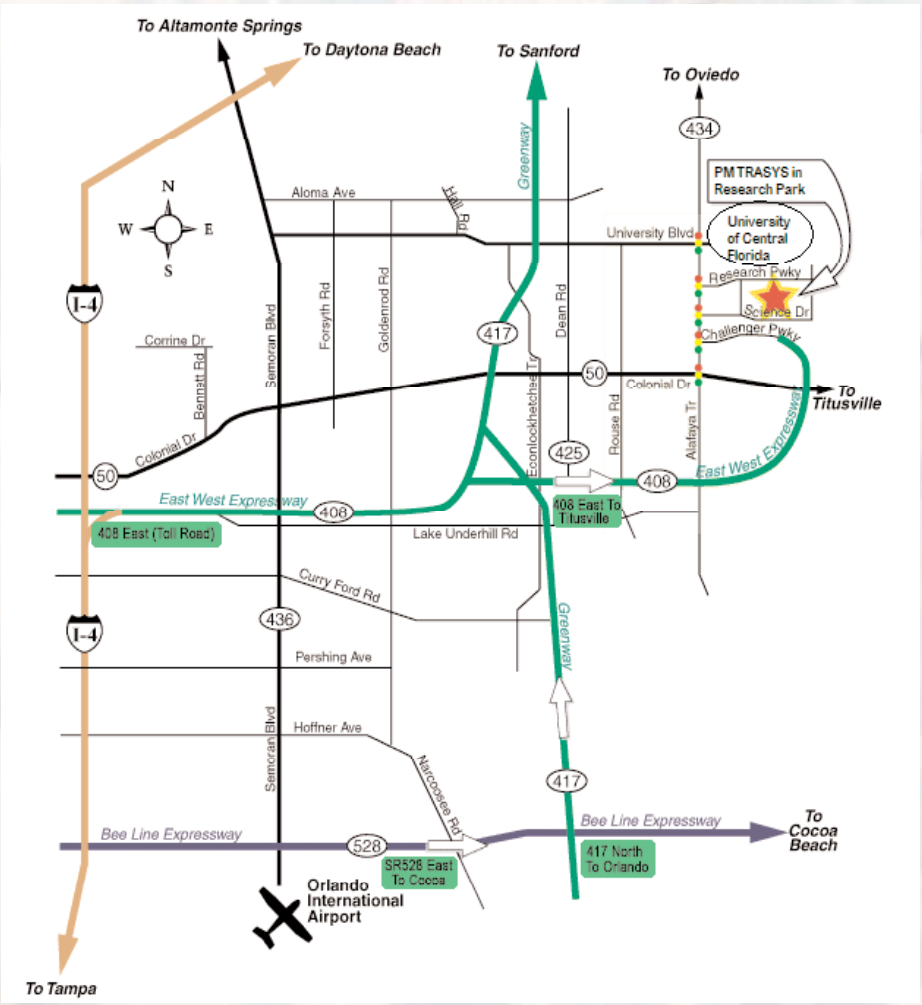
PM TRASYS Orlando Office Location

PM TRASYS is located in the Central Florida Research Park, at the corner of Research Parkway and Technology Parkway, (3100 Technology Parkway, Partnership II Building, 4th Floor) and only a few yards from the DeFlorez Complex, This location provides a cohesive and synergistic environment for PM TRASYS to work with the other military services, academia and industry.

The PM TRASYS mailing address is:

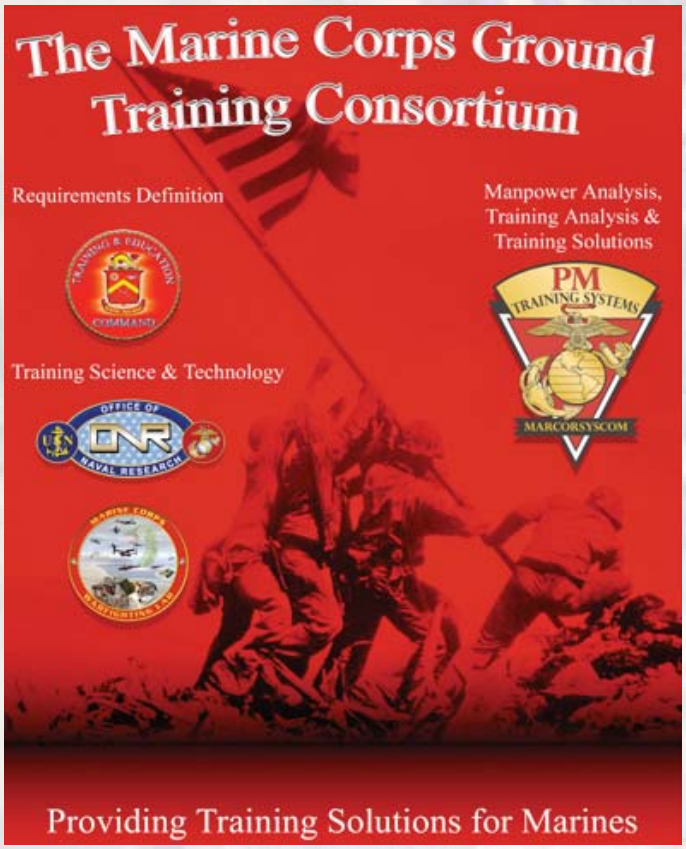
Marine Corps Systems Command
Program Manager for Training Systems
12350 Research Parkway
Orlando, FL 32826-3275

Partnership II Building



pmtrasys@usmc.mil 407-381-8762

Marine Corps Ground Training Consortium



Marine Corps Ground Training Consortium

PM TRASYS works in close partnership with several organizations to provide the best training solutions possible for Marines. The independent and interactive efforts in the areas of training and education by each of these organizations focuses on developing and delivering the most current and effective training available. A key member and a primary recipient of the products from these efforts is the Marine Corps Training and Education Command (TECOM) located in Quantico, VA. The organization and mission of TECOM are featured below along with selected sections that reinforce the partnership required to provide the best possible training and education solutions during new acquisitions. The never ending goal of this partnership is to produce the right Marine, at the right time and place, with the right skills required to succeed on today's modern battlefield.

Marine Corps Training and Education Command Quantico, Virginia

TECOM Mission and Organization: The mission of Training and Education Command is to "Develop, coordinate, resource, execute, and evaluate training and education concepts, policies, plans, and programs to ensure Marines are prepared to meet the challenges of present and future operational environments". To accomplish this diversified and burgeoning mission TECOM is further broken down into seven subordinate commands located across the Corps. These seven subordinate commands are: Training Command (TRNGCOM), Education Command (EDCOM), Marine Air Ground Task Force Training Command (MAGTFTC), Marine Corps Recruit Depots San Diego and Parris Island, Marine Aviation Weapons Training Squadron 1 (MAWTS-1), Mountain Warfare Training Center (MWTC).

Key TECOM Staff Sections that interface with PM TRASYS

TECOM G-3

The TECOM G-3 is the primary coordination and integration agency that PM TRASYS interfaces with during new and existing acquisitions. This coordination also includes the establishment of policies, procedures, and processes that standardize how training, education, and manpower issues are resolved and implemented during new and existing acquisitions. The G-3 supports PM TRASYS by conducting coordination and liaison with all formal schools and detachments. Assigns action officers to track, support, and resolve manpower and training issues during new and existing acquisitions. Provides expertise on overarching training and education policies/directives. Reviews and staffs manpower and training analysis/plans to insure training solutions satisfy TECOM's funding and resourcing requirements. Assist in the coordination with advocates, Occupational Field sponsors, Total Force Structure and other outside agencies impacted by any new or existing acquisition.

TECOM Technology Division (TechDiv)

Technology Division and the Program Manager for Training Systems maintain the partnering relationship of Combat Developer and Acquisition Agent for USMC Training Systems. As the Combat Developer (POM sponsor) and Requirements Generator (JCIDS and internal USMC requirements developer) for USMC ground training systems, Technology Division is responsible for the Joint Capabilities Integration Development System (JCIDS) and the MCCDC Expeditionary Force Development Process (EFDS) processes which include: review and analysis of Marine Corps needs (to include School Houses), conducting the Capabilities Based Assessment (CBA) to include the Functional Area Assessment (FAA), Functional Needs Assessment (FNA), and Functional Solution Analysis (FSA). During the FSA Technology Division, in conjunction with PM Training Systems, Office of Naval Research, and the Marine Corps Warfighting Laboratory considers technologies for acquisition potential and identifies technology gaps. The analysis and evaluation of technologies helps to better shape Marine Corps POM during the Planning, Programming, Budgeting, and Execution (PPBE) process thereby creating a functional POM profile to enable capabilities for the warfighters.

Technology Division is the lead USMC agency responsible for the implementation of DoD Training Transformation. To meet this requirement Technology Division is crafting the USMC Live, Virtual, Constructive Training Environment

which will transform training systems to mission planning and mission rehearsal capabilities within both a Joint and Title IX context. .

During FY-07 Technology Division will begin the Capabilities Based Assessment for the Squad Immersive Training Environment (SITE). SITE is envisioned to be a tetherless, squad sized team training, that will permit a squad leader to utilize all his real operational C2 tools, and an environment that trains to skills in the full range of military operations, with a 24/7 training capability.

Technology Division represents TECOM on internal and external Marine Corps matters pertaining to training systems. These meetings include the Joint Training Functional Capabilities Board (JTFCB) , the Joint Training Review Group (JTRG), the MCCDC Capabilities Development and Integration Board (CDIB) and the Executive-level IPT (E-IPT) for Capable Manpower at the Office of Naval Research. Technology Division also serves as the MCMSMO (Marine Corps Modeling and Simulation Management Office) which represents the Marine Corps to the Defense Modeling and Simulation Office (DMSO) under DoD on high-level modeling and simulation management issues.

TECOM Range and Training Area Management (RTAM) Division

RTAM Division was established to provide advocacy, policy, and headquarters oversight for range mattersthroughout the Marine Corps. Recent developments with respect to encroachment, safety, legal matters, weapons development and environmental issues have demonstrated the need for the Marine Corps to speak with a single voice to protect and sustain our valuable training sites. The RTAM Division is the entity to advocate and provide that single voice.

Accordingly, RTAM Division performs the following major functions:

- Acts as the proponent for all matters pertaining to the oversight and coordination of ranges and training areas.
- Represents the Marine Corps at DoD, Joint and InterService level meetings pertaining to ranges and training areas.
- Develops and publishes policy and programs to ensure efficient utilization of ranges and training areas.
- Develops plans and policy for the sustainment, upgrade and modernization of ranges and training areas.
- Coordinates Marine Corps legal policy with respect to range and training area issues.
- Acts as the single point of contact for USMC range (ground and air) safety issues to include certification and re-certification.
- Develops and fields a single Marine Corps Range Management System that provides for scheduling/managing ranges and includes training and management tools to enhance training effectiveness and range safety.
- Serves as the program sponsor for all Marine Corps training range programs and, as such, prepares a single, integrated program for POM consideration.

Interface and coordination with the PM TRASYS is nearly continuous. RTAM provides requirements information for POM initiatives dealing with ranges and training areas. PM TRASYS is our principal POC for all equipment purchased under the Ground Range Sustainment Program, the procurement POM initiatives, and all congressional adds or supplemental appropriations. PM TRASYS also manages the Contractor Operation and Maintenance of Simulators (COMS) contracts that provide contractual support services to ranges and training areas that have been the recipient of training systems acquired through RTAM initiatives. TECOM (RTAM) and PM TRASYS have begun coordination to establish an overarching range maintenance and operations contract.

TECOM College of Continuing Education

The College of Continuing Education (CCE) develops the professional competence of Marine, other service, international, and civilian students by developing and implementing Professional Military Education (PME) and training via distance learning. This is accomplished through a worldwide network of satellite campuses, Video Tele-Training (VTT), Learning Resource Centers (LRC) and the Internet. The programs and courses concentrate on the leadership, warfighting and staff development skills of the nation's military, and feature the educational standards, learning areas and learning objectives of the Joint Professional Military Education (JPME) program required by the Chairman of the Joint Chiefs of Staff. Through a variety of distance learning delivery systems, programs are accessible globally, thus preparing the graduates to perform more effectively in service, joint, and multinational environments at the tactical, operational, and strategic levels of war as well as in situations ranging from humanitarian assistance to combat. Interactive multi-media instruction is also developed in support of the TECOM Centers of Excellence.

Interservice/Industry Training, Simulation and Education Conference (I/ITSEC) 2007

Each year over 16,000 participants gather in Orlando for the premiere international military training conference. Participants come to see what industry has to offer and to gather information from the over 160 tutorials and paper presentations. I/ITSEC 2007 will be held 4-6 December 2007 at the Orange County Convention Center, Orlando FL. The 2007 conference theme is "Maintaining The Edge, Transforming The Force".

PM TRASYS, as the Marine Corps one of the hosts for the conference, encourages Marines to place this conference on your schedule and attend. With over 400 exhibitors, this conference definitely has something to offer for all the areas of training from learning management systems, to gaming technology, the classroom, distance learning, simulation; and live training operations and ranges.

Hope to see you there.

Stop by the Marine Corps booth to see what the Marines are doing and let us know how we can assist you.

Contact PM TRASYS for information or visit the I/ITSEC website www.iitsec.org.

pmtrasys@usmc.mil 407-381-8762

Live Training Systems Development

Mr. Brad Valdyke
Assistant Program Manager for
Live Training Systems Development

Mission: To design, develop, field and sustain the Marine Crops' integrated family of Live Training Systems and training aids providing MAGTF capability to conduct force-on-force and force-on-target training in realistic live fire and non-live fire environments.

The PMTRASYS Live Training Systems (LTS) division has reorganized to emphasize integration of solutions used in live training - both live fire and non-live fire. Our purpose in ensuring end to end integration of training systems is to provide to Marines the immersive live training environment necessary to replicate the Contemporary Operating Environment (COE). Focus of realism in 2006/2007 will continue to be replication of the urban environment.

Product Teams within the Live Training division are:

Range Instrumentation Systems (RIS) - Infrastructure, data collection systems, and integration of live training components providing operationally realistic interactions of live training audiences with live or simulated Opposing Forces and their intelligence functions and after action review/data capture capabilities. Leveraging common infrastructures where possible, RIS also implements system baselines for USMC Range Operations Centers (ROC).

Military Operations in Urban Terrain (MOUT) - Urban training systems providing representative and re-configurable environments for both live-fire (ball service ammunition) and non-live fire (simunitions, LASER engagement) urban warfare training.

Tactical Engagement Simulation Systems (TESS) - a family of training systems which simulate the weapons interaction of friendly and opposing forces direct and indirect fires.

Opposing Force Simulations (OPFOR) - Opposing force surrogates providing indication of enemy presence and maneuver. Targets, Battle Field Effects (BES), and Improvised Explosive Devices Defeat (IED-D) training systems to be integrated with other Live Training Systems to provide increased interaction and sense of realism of OPFOR fire, and maneuver. These efforts include the Ground Range Sustainment Program (GRSP).

APM Live Field Operations - Training systems and personnel which field and improve live training capabilities and training relevancy. Most visible of provided capabilities is the role players and civilians on the battlefield supporting Predeployment Training at MAGTFTC and homestations. Projects and efforts include unique system installations or upgrades as well as recurring support not falling within the Contractor Operations and Maintenance Support (COMS) regionally provided by PMTRASYS.

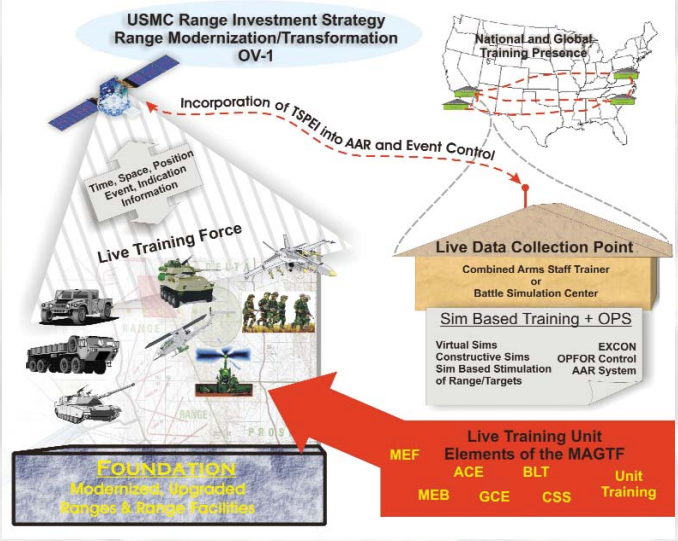
Live Training Systems Focus - The OSD Training Transformation (T2) initiative, implemented since 2003, continues to provide an end state focus for Live Training Systems integration. Capabilities which will become increasingly visible during 2007-2010 include integration of systems across the above focal areas plus interaction with Virtual and Constructive Simulations, thereby providing a flexible training environment able to expand in relationship to MAGTF and Joint training audience compositions. Integrating live and simulated training technologies, the training capabilities provided by the system of systems are able to enhance live-fire, force-on-target, and force-on-force training by providing after action review/ground truth feedback, realistic representation of opposing forces (OPFOR) and enhanced range and exercise control capabilities. Development of the live training systems is performed within a systems engineering process outlining the current "as-is" USMC Live Training Environment Architecture while also designing to meet a future USMC Live-Virtual-Constructive Training Environment (LVC-TE) end-state.

Our touchstone in Live Training Systems is the focus of the Marine - "The Training Audience is always LIVE!"

Range Instrumentation Systems (RIS) Product Team Programs

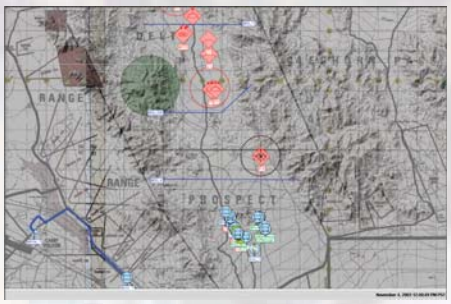
What follows are the programs under development by the RIS Product Team.

Range Modernization and Transformation (RM/T)



The Range Modernization and Transformation (RM/T) program modernizes major USMC base and station live training ranges with a dynamic training system capable of real time and post mission battle tracking, data collection and the deliverance of value added After Action Review (AAR). Interface with installation command and control training centers (i.e. Battle Staff Training Facility, Combined Arms Staff Trainer, Battle Staff Simulation Center) is paramount to producing multiple scenario events that deliver relevant and realistic training. Integrating live and simulated training technologies, the fielded capabilities actively enhance live-fire, force-on-target, and force-on-force training through extensive after action review with ground truth feedback, realistic representation of opposing forces (OPFOR) and enhanced range and exercise control capabilities. Major system components of modernization include:

- Dismounted and Vehicle Tracking Instrumentation (CRIS, DITS, IGRS, Video Instrumentation)
- Aircraft Tracking Instrumentation
- Exercise Controller Instrumentation providing remote situational awareness display
- Tactical Voice Recording
- Tactical Data/C4ISR Interoperability (C2PC, DACT, FBCB2, BFT)
- Real Time 2D/3D Exercise Monitoring Capability
- Near Real Time Dynamic-Multimedia/Replay AAR Capabilities
- Take Home Output Packages
- Range Control Information Processing and Situational/Safety Awareness Displays
- Globally connectivity of USMC live training with distributed simulation and joint training through a common training-information architecture and local-connecting infrastructures



Range Modernization and Transformation links Marine Corps live training to the tenets of Training Transformation (T2) - Joint National Training Capability (JNTC) and Joint Assessment and Evaluation Capability (JAEC). Instrumentation allows Service and Joint virtual and constructive forces to interact with USMC live training forces from distributed locations. Eventually expanded to also incorporate coalition forces, MAGTF live training in open and urban terrain is enhanced by providing capabilities to conduct realistic training which exercises all battlefield operating systems, and by allowing continuous assessment of performance, interoperability, and identification of emerging requirements.

Military Operations in Urban Terrain (MOUT) Product Team Programs

What follows are the programs under development by the MOUT Product Team.

Non-Live Fire MOUT/UWTC Facilities

The Non-Live Fire Military Operations in Urban Terrain (MOUT) / Urban Warfare Training Center (UWTC) Facilities are training facilities based on extensive studies by

the Marine Corps Warfighting Laboratory, which have shown that units trained to operate as an integrated combined arms team are more successful within the urban battle space and suffer fewer casualties. With this in mind

and given the nature of operations in support of Operation Iraqi Freedom and the Global War On Terrorism, the requirement to train company and battalion sized forces is critical. Individuals and small units up to battalion size conduct foot, mobile, mechanized and/or armor patrols up to and through the site. Operations are conducted during both day and night. The training facilities contains dispersed structures to support 360 degree training of fire and maneuver. The MOUT/UWTC Non-Live Fire Facilities is primarily used for company and battalion pre-deployment force-on-force fire and maneuver training using SESAMs ammunition and/or MILES gear within an urban terrain facility. Roads are of variable width allowing and limiting vehicle movement, to include the capability of supporting armored vehicle movement.

The Non-Live Fire MOUT/UWTC facilities are currently fielded at MCAGCC, Twentynine Palms. CA. Future fielding (3QFY06) will occur at MCB Camp Lejuene, with future plans for MCB Camp Pendleton, CA; MCB Quantico, VA; MCB Okinawa Japan; MCB Kanehoe Bay, Hawaii; MCAS Yuma and MWTC Bridgeport.

Live Fire MOUT/UWTC Facilities

The MOUT/UWTC Live Fire Facilities follow the same concept as the Non-Live Fire MOUT/UWTC facilities. The Live Fire facilities includes company live fire and maneuver training complexes and multi-vehicle convoy live fire and maneuver training complex. The complexes consist of 3 types of structures:

1) modular, nonpermanent, internally reconfigurable, breachable/seizable enclosed structures, live-fire capable internally/externally up to 7.62mm
2) modular, nonpermanent, empty, partially seizable, enclosed structures, live-fire capable internally/externally up to 7.62mm;
3) and nonpermanent, non-enterable 4-sided façade structures.

Individual and small units up to company size conduct foot, mobile, mechanized and/or armor patrols up to and through the two sites. Operations are conducted during both day and night. Individual, crew served and indirect fires are employed with 5.56mm and 7.62mm ball ammunition used to fire at targets and structures within the MOUT area and larger weapon systems directed at targets in outlying areas. For example, a .50 cal may be fired at a target 1,000 meters from its position from within the MOUT while the Forward Air Controller (FAC) calls in a Cobra on a fleeing target 3km away. Fire and maneuver occurs along and between primary and secondary streets and access ways. The first two types of structures have capability to support and sustain fires at internally placed targets. Both training facilities contain dispersed structures to support 360 degree training of fire and maneuver. Roads are variable width allowing and limiting vehicle movement, to include the capability of supporting armored vehicle movement.

The Live Fire MOUT/UWTC facilities are currently fielded at MCAGCC, Twentynine Palms. CA. Future fielding of limited live fire facilities will occur at MCB Camp Lejeune in the 3rd quarter of FY06.

Sniper Towers

Sniper towers shall improve the existing firing points and increase the variety of urban “shot-types”. Improvements includes:

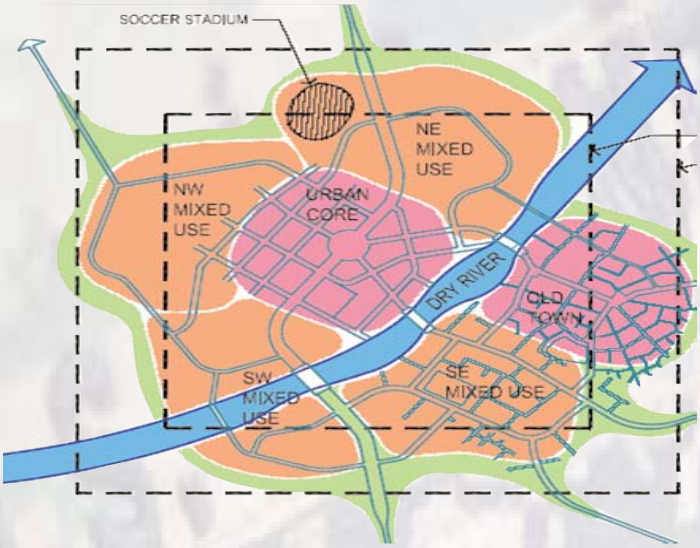
A multi-storied platform for ground-level and above ground level urban sniper scenarios and TTP proficiency

Eight (8) unique training compartments and roof-top firing position scenario variety

A training environment that allow sniper teams to conduct live fire training both into and out of the multi-storied compartmentalized façade with existing portable, remote operated targets and/or bullet traps (as necessary).

Combined Arms Military Operations in Urban Terrain (CAMOUT)

Extensive studies by the Marine Corps Warfighting Laboratory have shown that units trained to operate an integrated combined arms team are more successful within the urban battle space and suffer fewer casualties. The CAMOUT training system at the Marine Air Ground Task Force Training Command (MAGTFTC) Marine Corps Air Ground Combat Center (MCAGCC) Twentynine Palms, California will support this critical training requirement. CAMOUT will allow the USMC to conduct quality and credible Advanced Urban Warfare Training in a realistic Third World environment. CAMOUT will primarily be used for force-on-force fire and maneuver training using SESAMS ammunition and/or MILES gear within an urban terrain setting and is designed for training units up to Marine Expeditionary Brigade (MEB) level. CAMOUT will support a variety of training tasks related to the deployment and



Primary Town

maneuver in an urban setting of a MEB and its constituent elements. Within CAMOUT, Marines can be confronted with the full range of tactical challenges from humanitarian relief efforts to peacekeeping and law enforcement to direct combat that might be encountered in a complex urban setting within a relatively brief timeframe or a small physical area - known as the "three block war".

To accomplish the training mission, CAMOUT will be configured to include the following functional components known as Primary Town: Urban Core, Old Town, and four Mixed Use Districts (i.e., Hospital District, Diplomatic District, Industrial District, and the Stadium District). All of the Primary Town components are non-live fire environments. The structure, character, density, and features of each district reflect logical functions that are typical within an urban setting and each district has the capability of engaging an entire battalion.

Tactical Engagement Simulation Systems (TESS) Product Team Programs

What follows are the programs under development by the TESS Product Team.

Multiple Integrated Laser Engagement System - 2000 (MILES-2000)

MILES 2000 is a training system that provides a realistic battlefield environment for Marines involved in training exercises. MILES-2000 provides a family of low power, eye safe lasers which simulates the direct fire characteristics of infantry assault, armor, anti-armor mechanized weapons system and provides the gunner with hit or miss determination. Each individual and vehicle in the training exercise has a detection system to sense hits and perform casualty assessment. Laser transmitters are attached to each individual and vehicle weapon system and accurately replicate actual ranges and lethality of the specific weapon systems. MILES-2000 is designed for use by MAGTF as a force-on-force engagement simulation training system.

Precision Gunnery Training Systems (PGTS)

PGTS is used to teach precision gunnery skills to TOW gunners in the field. This training can occur at designated ranges, general outdoor areas, or representative tactical environments. This system can be used for both initial gunner familiarization in an outdoor environment as well as for gunner skill enhancement and progression.

Special Effects Small Arms Marking System (SESAMS)

SESAMS is a user-installed weapons modification kit that allows the individual Marine to fire, at short range, a low velocity marking ammunition while precluding the weapon from firing live ammunition. SESAMS provides instantaneous feedback during force-on-force close quarter battle scenarios. This immediate visual and sensory feedback to the shooter and target without firing live ball ammunition reduces risk to participants and significantly reduces the maintenance costs to shooting houses. SESAMS is employed with current and projected standard and non-standard Marine Corps small arms. SESAMS conversion kits convert current and future small arms to fire low velocity marking ammunition by replacing the barrel, upper receiver, and or bolt. A SESAMS converted weapon has distinct identifiable markings to enable identification under both normal and reduced-visibility conditions.

Tank Weapons Gunnery Simulation System / Precision Gunnery System (TWGSS/PGS)

TWGSS/PGS is an appended, laser-based, precision gunnery and tactical engagement simulation trainer. The TWGSS is the model integrated on the M1A1 tank to simulate the main gun and the coaxial machine gun. The PGS is integrated on the Light Armored Vehicle (LAV) to simulate the 25mm main gun, coaxial machine gun and TOW missile. The TWGSS/PGS allows on-vehicle precision gunnery without the expenditure of actual ammunition. Both TWGSS/PGS are fully integrated with the vehicle fire control system requiring the crew member to perform gunnery functions; lead, super-elevation, and lase, exactly as they would in combat. The TWGSS/PGS provide visual tracers, burst, and obscuration through the vehicle sights. All event data are recorded for display on a notebook computer for after action review.

Opposing Force Simulations (OPFOR) Product Team Programs

What follows are the programs under development by the OPFOR Product Team.

Remote Engagement Targets (RETS)

RETS is a computer-controlled automated system of weather resistant stationary pop-up and moving targets for infantry, armor, and anti-armor training. The system offers computer-driven programmed tactical scenarios or it can be operated in a manual mode with group or individual targets raised on command. The number of scenarios is limited only by the quantity and type of targets and the imagination of the users. There are several different configurations of the system and several variations within each configuration. RETS Ranges have been installed at various locations within the Marine Corps and will support Fleet Marine Force (FMF) and base units live-fire training requirements for all ground direct fire weapons to include combat vehicles employing field-firing techniques. RETS significantly enhances the capability to train individual Marines, crew-served weapons teams, small units, and combat vehicle crews in the employment of their weapons systems under the most realistic combat conditions possible.

IMPROVISED EXPLOSIVE DEVICE (IED) SIMULATORS

Improvised Explosive Device (IED) simulators are trainers used to enhance the OPFOR training environment

M155T Roadside Bomb Simulator

Simulates the appearance and size of a 155 shell. This device utilizes CO2 and talcum powder to recreate a visual and audible blast. Detonation occurs through remote or hardwire triggering devices.

M80TR Antipersonnel Mine Simulator

Simulates the appearance and size of an M80 Antipersonnel mine. This device utilizes CO2 and talcum powder to recreate a visual and audible blast. Detonation occurs through pressure plate device.

M12TR Booby Trap Simulator

Simulates the appearance of pipe bomb booby traps. These devices utilize CO2 and talcum powder to recreate a visual and audible blast. Manual detonation required.

Self Contained Portable Improvised Explosive Device Simulator (SCOPIS)

SCOPIS is a small, lightweight, portable, modular system that fires six pyrotechnic devices individually or simultaneously for an unmistakable audible and visual blast. Its versatility and flexibility allow the operator to add on external triggers and pyrotechnics, providing additional training enhancement. It features multiple mode of activation. It cartridge produces a flash/bang effect that provides the trainer with the ability to replicate IED's.

Counter Radio-controlled Electronic Warfare (CREW) Training Devices

The CREW training kits are retrofitted with a radio transmitter which allows them to interface and work with the USMC approved IED simulators. They are developed to replicate the Warlock CREW1 family of systems. Marines learn nomenclature and function of the devices, receive specific training on how to operate the systems, and incorporate this training and usage into their daily tactics, techniques, and procedures (TTP's).

BATTLEFIELD EFFECTS SIMULATORS

Devices used in a live and non-live fire training environment to re-create the battlefield with a more realistic and vibrant OPFOR threat. These devices include pyrotechnics blasts, visual signatures, sound effects simulation, and gunfire simulation.

Omega 36 and 60 Battlefield Effect Simulator (BES)

Omega BES systems are portable and lightweight modular system that can fire up 36 cartridges (Omega 36) and 60 cartridges (Omega 60) on command, individually or simultaneously in order to create a realistic OPFOR training environment. The Omega 36 and 60 launchers are battlefield effect simulators that fire LA 44 - LA 47 (Omega 36) and LA 53 and LA 54 (Omega 60) pyrotechnic cartridges. All pyrotechnic cartridges can safely be fired from both systems. The cartridges simulate targetry receiving an impact (Target Hit), weaponry firing (hostile fire) , air explosion (airburst), and small air missile being fired (Stinger). These devices can be used as stand-alone simulators or mounted to a moving armor target (MAT). All of our targetry interface with the Omega 36 and 60 systems.

Ground Range Sustainment Program (GRSP)

The Range and Training Area Management Division of Training and Education Command has partnered with the Program Manager for Training Systems, Marine Corps System Command (PMTRASYS) and the Naval Surface Warfare Center, Corona Division (NSWC Corona) to establish a Ground Range Sustainment Program (GRSP). This program will gather potential projects for GRSP funding, complete basic engineering/costing data for projects, prioritize the projects to be funded, and fund the approved projects according to the prioritization and limits of the GRSP budget. This refers to accomplishing today's training using improvements or replacement of existing training devices such as lifters, worn targets and replacement control computers that cannot be accomplished with existing operating and maintenance (O&M) budgets. The maintenance of "state of the art" range control systems also supports current training requirements. This is the area where GRSP will be most used.

APM Live Field Operations Product Team Programs

What follows are the programs under development by the APM Live Field Operations Product Team.

ROLE PLAYERS

The urban battlefield has Marines encountering a myriad of activity. Host nation people in their daily activity is a typical site for Marines deployed world-wide. To re-create the battlefield and provide a more realistic training environment, PM Training Systems has acquired role players to be dispersed amongst specific training areas in MCAGCC, Twentynine Palms CA, MCB Camp Lejeune, NC, and MCB Kanehoe Bay, HI. This training will require the employment of role players (RPs) to act as Foreign Language Specialists (FLS) and Civilians On the Battlefield (COB), insurgents, terrorists, and other personnel encountered in the intended theater of operations.

The Role Playing contractor provides a total turn-key operation. This includes furnishing all labor, cold and wet weather clothing, housing, feeding requirements and services to perform required operations, and performing all work incidentals to the equipping and preparation of personnel to serve as role players functioning as COBs and FLSs during Training Operations..

Role players will interact with USMC units in accordance with (IAW) the Master Scenario Event List (MSEL). The role players shall replicate all aspects of a populated municipality. It is required for role players to refrain from speaking English or speak only broken English while interacting with Training Units.

Fielded Systems Supported by APM Live

Listed below are fielded systems receiving life cycle sustainment support from APM Live.

Armor Moving Target Carrier (AMTC)

The AMTC is a target mover designed to carry a wooden tank silhouette target over a 300 meter length of track. It is used in the training of anti-armor weapons. It provides a moving target with the capability of raising and lowering armor target silhouettes through a 90 degree arc. It provides an indication when the target silhouettes are hit. With the addition of the Joanell Pyrotechnic Device the system can also simulate firing hostile and/or target kill. These movers are radio controlled and can operate in winds of up to approximately 20 MPH.

The AMTC are available at the following Marine Corps Bases: Marine Air Ground Task Force Training Center, 29 Palms, CA.

Black Smoke Generator

During live fire exercises, the Black Smoke Generator provides Marine forces with a visual indication of direct hits on opposition force targets.

Dust Generator

During live fire exercises strategically placed Dust Generators provide Marine forces with visual indicatons of opposition force presence and movement.

Enhanced Remoted Target System (ERETS)

Also Known as RETS, the ERETS is targetry equipment which, when installed on standard ranges, supports marksmanship, gunnery, and combined arms training. ERETS consists of stationary and moving infantry and armor target hardware with related control hardware and software. A range control station provides automatic and manual control of target mechanisms, detects and accumulates target hit data, and prints a permanent record for evaluation of the firer's or crew's performance. Simulators adding realism to training scenarios include infantry night muzzle

flash, armor target kill, and infantry and armor hostile fire simulators.
The RETS range system may include the following major components: Infantry Target Mechanism (ITM), Infantry Moving Target Carrier, Rifle Fire Simulator, Range Control Station, Target Holding Mechanism Tank Gunnery, Armor Moving Target Carrier, and Gunfire Simulator.
Part of ERETS is a moving version of the ITM that consists of a hard-wire controlled infantry pop-up target mechanism. This allows Marines to engage a moving target.
ERETS are located on several live fire and simulation training ranges at Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA , Quantico, VA and the Marine Air Ground Task Force Training Center, 29 Palms, CA.

Hostile Fire and Target Kill Simulator (Joanell Device)

The Hostile Fire and Target Kill Simulator (Joanell Device) is a pyrotechnic device used to simulate either hostile fire or target hits. One of various pyrotechnic packages are inserted into the tubes and fired remotely: i.e. L602 Arty Flash Simulator - simulating enemy arty shooting at friendly forces, L709 Simulator Target Hit - flash representing a hit to a target, and L720 Target Hit - black smoke representing a destroyed target.
The Hostile Fire and Target Kill Simulator (Joanell Device) is available at the following locations: Marine Air Ground Task Force Training Center, 29 Palms, CA.

Live Fire Miltary Operations in Urban Terrain/Urban Warfare Training Center (MOUT/UWTC) Facilities

The MOUT/UWTC Live Fire Facilities includes company live fire and maneuver training complexes and multi-vehicle convoy live fire and maneuver training complex. The complexes consist of 3 types of structures:

1) modular, nonpermanent, internally reconfigurable, breachable/seizable enclosed structures, live-fire capable internally/externally up to 7.62mm

2) modular, nonpermanent, empty, partially seizable, enclosed structures, live-fire capable internally/externally up to 7.62mm;

3) and nonpermanent, non-enterable 4-sided façade structures.

Individual and small units up to company size conduct foot, mobile, mechanized and/or armor patrols up to and through the two sites. Operations are conducted during both day and night. Individual, crew served and indirect fires are employed with 5.56mm and 7.62mm ball ammunition used to fire at targets and structures within the MOUT area and larger weapon systems directed at targets in outlying areas. Fire and maneuver occurs along and between primary and secondary streets and access ways. The first two types of structures have capability to support and sustain fires at internally placed targets. Both training facilities contain dispersed structures to support 360 degree training of fire and maneuver. Roads are variable width allowing and limiting vehicle movement, to include the capability of supporting armored vehicle movement.

The Live Fire MOUT/UWTC facilities are currently fielded at MCAGCC, Twentynine Palms. CA.

Non-Live Fire Miltary Operations in Urban Terrain/Urban Warfare Training Center (MOUT/UWTC) Facilities

The Non-Live MOUT/UWTC Facilities are training facilities based on extensive studies by the Marine Corps Warfighting Laboratory, which have shown that units trained to operate as an integrated combined arms team are more successful within the urban battle space and suf-

fer fewer casualties. With this in mind and given the nature of operations in support of Operation Iraqi Freedom and the Global War On Terrorism the requirement to train company and battalion sized forces is critical. Individuals and small units up to battalion size conduct foot, mobile, mechanized and/or armor patrols up to and through the site. Operations are conducted during both day and night. The training facilities contains dispersed structures to support 360 degree training of fire and maneuver. The MOUT/UWTC Non-Live Fire Facilities is used for company and battalion pre-deployment force-on-force fire and maneuver training using SESAMs ammunition and/or MILES gear within an urban terrain facility. Roads are of variable width allowing and limiting vehicle movement, to include the capability of supporting armored vehicle movement.

The Non-Live Fire MOUT/UWTC facilities are currently fielded at MCAGCC, Twentynine Palms. CA. Future fielding will occur at MCB Camp Lejuene in 3rd quarter of FY06. Plans exist for MCB Camp Pendleton, CA; MCB Quantico, VA; MCB Okinawa Japan; MCB Kanehoe Bay, Hawaii; MCAS Yuma and MWTC Bridgeport in the future.

M31A1 Pop-up Targets

M31A1 Pop-up targets are used at various RETS ranges. All are hard-wired and programmable for number of hits to kill. Targets will fall once that number has been reached. Provides Marines with a stationary individual target to engage.

M31A1 Pop-up targets are employed on several Live-Fire and Simulation Ranges at Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Kaneohe Bay, HI, Quantico, VA, and the Marine Air Ground Task Force Training Command (MAGTFTC), 29 Palms, CA.

Multiple Integrated Laser Engagement System 2000 (MILES 2000)

MILES 2000 is a family of low power, eye safe lasers which simulates the direct fire characteristics of infantry assault, armor, anti-armor mechanized weapons system and provides the gunner with hit or miss determination. MILES 2000 is designed for use by the MAGTF as a force-on-force engagement simulation training system. MILES 2000 components included:

- Individual Weapon Systems (M16, M249, M2, M40A1, M240G)
- Anti-Armor Weapons (AT-4, SMAW, TOW)
- Combat Vehicle Systems (M1A1, LAV family, AAV family)
- Combat Support Vehicle Systems (M900, LVS, HMMWV)
- Independent Target Systems (ITS) for structures
- Pyrotechnic Devices (Main Gun Signature Simulator)

- Controller Device/Training Data Transfer Device (CD/TDTD)
- MILES Target Interface Device (moving and stationary targets)
- Automated Small Arms Alignment Fixture (ASAAF)

The MILES 2000 is available at the following locations: Marine Corps Bases, Camp Lejeune,NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Center, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and Supporting Establishments Reserve locations.

Portable Infantry Target Systems (PITS)

PITS are a live fire target system with automatic scoring and are programmable to support various scenarios. This system will be used to train personnel in marksmanship using a realistic threat oriented environment. It is lightweight and one-man portable. Each PITS consists of 60 portable remote controlled target lifters, a battery recharging system and four or six hand-held VHF controllers that are capable of controlling lifters out to a distance of 1500 meters.

PITS are available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Command, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and Supporting Establishments.

Precision Gunnery System (PGS)

The PGS is a LAV-25 mounted training device that assists the LAV crew in gaining and improving proficiency in gunnery skills without expenditure of live ammunition. Gunnery and tactical training can be conducted anywhere the eye-safe laser firing is permitted. PGS provides the crew with visual and sound effects that accurately simulate real firing conditions.

The PGS is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Precision Gunnery Training Systems - TOW - Field Tactical Trainer (FTT) (Outdoor)

The AN/TWQ-T5 Precision Gunnery Training System TOW Outdoor (PGTS TOW Outdoor) is used to teach precision gunnery skills to TOW gunners in the field. This training can occur at designated ranges, general outdoor areas, or representative tactical environments. The Outdoor TOW system can be used for both initial gunner familiarization in an outdoor environment as well as for gunner skill enhancement and progression.

The PGTS - TOW (FTT) Outdoor is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan, the Marine Air Ground Task Force Training Command, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and Supporting Establishments.

Simunition FX Adaptor Kits

The adaptor kits are a series of user-installed conversion/modification kits that allows various infantry weapons to fire at short range, a low velocity marking ammunition. The FX adaptors kits preclude the weapon from firing live ammunition. This system allows for realistic Force on Force training by providing normal environmental cues, immediate target feedback, non-toxic primers, and a non-toxic marking medium. Adaptor kits are available for the M16A2, M9, M1911, and MP5.
Simunition FX Adaptor Kits are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Small Arms Gunfire Flash Noise Simulator (24V)

This simulator generates flash and sound for realistic simulation of small arms gunfire.
The Small Arms Gunfire Flash Noise Simulator (24V) is available at MCB Okinawa, Japan.

Small Arms Gunfire Noise Simulator

This device simulates small-arms gunfire (rifle or machine-gun noise) for infantry training, thus adding realism to day or night maneuvers, and conditioning trainees to the sound of operational small caliber weapons. The device consists of a gun simulator, a gas supply, and an AC to DC converter. Outwardly, the device resembles a real machinegun. The simulator may be fired locally or remotely. It can fire single shots or bursts using a metered amount of oxygen and propane that is ignited inside the barrel by a spark plug.
Small Arms Gunfire Noise Simulators are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Special Effects Small Arms Marking System (SESAMS)

SESAMS is a user-installed M249 Squad Automatic

Weapon (SAW) conversion/modification kit that allows the M249 SAW to fire, at short range, a low velocity marking ammunition, while precluding the weapon from firing live ammunition. The system provides normal environmental cues, immediate target feedback, non-toxic primers, and a non-toxic marking medium.
SESAMS are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan, the Marine Air Ground Task Force Training Command, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and Supporting Establishments.

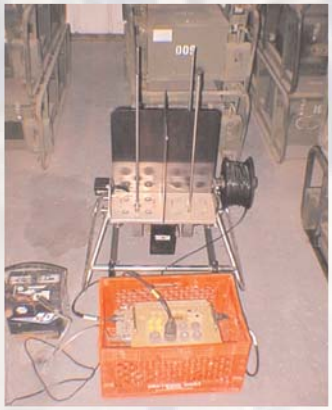
Stationary Armor Target / Tank Target Mechanism

The Tank Target Mechanism is used for training in the use of anti-armor weapons. It provides the capability of raising

and lowering armor target silhouettes through a 90-degree arc and indicates when hits on target silhouettes are made. With the addition of the Pyrotechnic Device the system can also simulate firing hostile and/or target kill. The system can either be portable or hardwired and is designed for use in various terrains.

Stationary Armor Target / Tank Target Mechanism are employed on several Live-Fire and Simulations Ranges at Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Quantico, VA, and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Surface-to-Air Signature Launcher, Simulator



The Surface-to- Air Signature Launcher Simulator is a launcher mechanism for the Surface-To-Air Missile Signature simulator. This training device provides Marines with a visual representation of simulated enemy surface-to-air missiles.

Tank Gunfire Simulator (TGS) - Hoffman

The TGS, also known as the Hoffman Device, is used for force on force MILES/TWGSS training. With the aid of pyrotechnic charges, the device simulates, both visibly and audibly, the firing of a tank main gun. The TGS can be mounted on 90 to 152 mm gun barrels. Each simulator can be loaded with up to nine electrically ignited pyrotechnic charges. The TGSs are checked out to customers who are then responsible for transporting, employing and operating the devices. The customer is also responsible for ordering, transporting, and loading of the pyrotechnics.

The TGS, is available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Hawaii, Quantico, VA, and other Marine Reserve Operational Forces.

Tank Weapon Gunnery Simulation System (TWGSS)

The TWGSS is a tank-mounted training device that assists the crew in gaining and improving proficiency in gunnery skills without expenditure of live ammunition. Gunnery and tactical training can be conducted anywhere the eye-safe laser firing is permitted. TWGSS provides the crew with visual and sound effects to accurately simulate real firing conditions. TWGSS simulates the firing of the tank's main gun, the firing of the coaxially mounted machine gun and the effects of a target vehicle being hit. The TWGSS consists of three subsystems: firing system, target system, and Training Data Retrieval System (TDRS).

TWGSS is interoperable and compatible with PGS, MILES, Laser Target Interface Devices (LTIDs), Thru-Sight Video (TSV) System, and Improved Tank Gunfire Simulator (ITGS)(Hoffman Device).

The TWGSS is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Target Holding Mechanism, Tank Gunnery (THMTG)

A predecessor to the Tank Target Mechanism, the THMTG is used to train the use of anti-armor weapons. It provides the capability to raise and lower armor target silhouettes through a 90-degree arc and indicate when hits on target silhouettes are made. With the addition of pyrotechnic devices, the system can also simulate hostile fire and/or target kill. The system can be portable or hard-wired on a range. When not hard-wired, the Offensive Range Controller (ORC) radio controller is used to control and program targets remotely.

The THMTG are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA and the Marine Air Ground Task Force Training Command, 29 Palms, CA.


U.S. MARINES

Virtual Training Systems Development

Ms. Annette Pike
Assistant Program Manager for
Virtual Training Systems Development

Mission: To develop, procure, field, and sustain Virtual Training Systems that meet USMC approved requirements.

Vision: To efficiently and effectively field Virtual Training Systems that improves a Marine's warfighter capability through an interoperable training environment.

Listed below are the programs under development by the Virtual Training System Development APM at PM TRASYS.

Assault Breacher Vehicle Remote Control System (ABV RCS)

The Assault Breacher Vehicle Remote Control System training effort consisted of developing a training package (operator and maintenance) for the Operational Testing in support of the Joint Robotics Program Office. As part of this effort, a low-level desk-top training tool was also developed to help training. The focus of this project was to provide quickly an 80% training solution to get past Operational Test and then focus on the long-term solution, such as Distance Learning and Mobile Training Teams (MTTs). The operator and maintenance manuals and the desk-top training tool were delivered 3rd quarter FY06 to the Joint Robotics Program Office in Huntsville, AL. FY07 tasks will consist of developing an ABV RCS low fidelity maintenance trainer and updates to the operator and maintenance training packages.

Combat Vehicle Training System (CVTS)

CVTS provides the Marine Corps the ability to train M1A1, LAV-25, and AAV crew members to the approved standards of combat skills and readiness. The end state system will be a high fidelity networked training system supporting individual, collective (crew, section, and platoon), combined arms, and joint training scenarios. CVTS will support gunnery proficiency, weapons platform familiarization, and tactical training. CVTS will provide a measurable improvement in individual, crew, and unit level tactical proficiency levels for tank, light armored reconnaissance and assault amphibian battalions. The system will train target acquisition, identification, and engagement with the weapons appropriate for each platform. The CVTS project will provide a computer generated battlefield to include targets, target signatures, and weapon effects. Aural cues presented to the crews will consist of realistic environmental, platform, and weapon sounds. An instructor/operator will be able to control exercise selection, observe crew member actions, and conduct after-

action reviews with the crews. The CVTS - M1A1 are fielded land-based training systems. The CVTS - M1A1 also has a requirement for a deployable training application and is under contract for delivery in fourth quarter 2007. The CVTS - LAV has a requirement for land-

based and deployable training applications. The land-based and deployable configurations are under contract for delivery in first quarter 2007 and fourth quarter 2007 respectively. The CVTS-AAV is under contract for land-based training systems with delivery in second quarter 2006.

Expeditionary Fighting Vehicle (EFV) Training System Program

The overall objectives for the EFV training system program is to design, test, field, and support the various training resources necessary to adequately train new EFV crews and veteran AAV Marines in the operations and maintenance of the EFV at the Assault Amphibian School (AAS) in Camp Pendleton, CA and Reserve Forces. The specific training tasks include vehicle familiarization and operations, primary and secondary weapon system gunnery techniques, communication and navigation, and command and control operations. The EFV training system consists of the following training devices to be installed in the new Assault Amphibian School:

- Driver Simulators
- Turret Simulators
- Maintenance Trainers
  - electrical system maintenance part task trainer
  - weapon system maintenance part task trainer integrated w/GFE turret
  - set of maintenance skill trainers
  - engine maintenance component trainer
- Communication and Navigation Laboratory
  - EFV (C) communications and navigation part task trainer
  - EFV (P) communications and navigation part task trainer
- Automated Electronic Classrooms

These training devices will use a high-fidelity training approach that replicates the actual EFV system performance characteristics and man-machine interfaces. The objective is to facilitate and enhance the student's transfer of training in both familiarization and skills proficiency. These training devices are to provide a method for measuring the level of student achievement concerning academic, hands-on skills training and retention.

Improved Moving Target Simulator (IMTS)

IMTS is a Short Range Air Defense (SHORAD) weapons training system. The upgraded IMTS is a weapons proficiency trainer that provides computer-generated aircraft and computer-generated background images in a 360-degree dome. Real time weapon interface and student action monitoring are provided during scenario execution.

This system provides the Stinger gunner the opportunity to maintain proficiency for successful operation of the Stinger Manportable Air Defense System (MANPADS) using the latest technology. The training provided allows for three Stinger gunners to train simultaneously using proper techniques and skills to identify, acquire, track and launch Stinger missiles. The upgrade will provide for more realistic feedback and better video resolution.

This system will provide the Stinger gunner and his team Leader the opportunity to work on individual tracking skills, the proper acquiring methods and the gunner's ability to properly launch his missile. The upgraded system allows the Stinger Section Leader to train with three teams at once resulting in improved training of the entire section.

The Section Leader will have the opportunity to interject malfunctions into the scenario that will cause the gunner to apply immediate action, or make a split-timing decision, thus providing a better trained SHORAD for the Marine Corps.

Indoor Simulated Marksmanship Trainer - Enhanced (ISMT-E)

ISMT-E is an interactive audio/video weapons simulator that provides marksmanship training, weapons employment training, and tactical decision-making training for a variety of small arms. The training system consists of infantry weapons that are instrumented with lasers which enable Marines to simulate engaging numerous target types in lanes, video, and CGI scenarios. The scenarios replicate range firing for qualification on basic infantry weapons, tactical weapons employment training, and shoot/no- shoot scenarios. The ISMT provides training for up to four shooters per system. An Infantry Squad Trainer (IST) links 3 ISMTs together and provides training for up to 12 shooters in a squad. The ISMT-E upgrade supports up to five firing positions per system and 15 Marines per IST. The ISMT-E portrays video scenarios with DVD, utilizes lanes imagery for marksmanship training, and has the flexibility for Marines to author CGI scenarios for tactical employment training. Both configurations, the ISMT and ISMT-E, replicate marksmanship qualification ranges and judgmental shoot/no-shoot situations. Both configurations also have a

computer-based instructor control station which allows the operator to select and control all training while providing comprehensive diagnostic, replay, feedback, and scoring capabilities. The ISMT-E/IST can also provide forward observer, forward air controller, and indirect fire training. Other system capabilities include scenario development, target authoring, video branching, and night vision device training. The ISMT-E will be permanently installed on board the LPD-17. ISMTs are fielded across the Marine Corps at formal schools, infantry regiments, the Wing, MSG, Security Forces, and Reserve locations.

Two ISMT-E upgrades are currently under contract, which are:

the integration and fielding of optics gear and

the replacement of obsolete computers.

The ISMT-E Optic Upgrade integrates live USMC field optics with ISMT's virtual small arms marksmanship and combat shooting training capabilities. Upgraded system capabilities include:

Weapon tracking system accuracy at one minute (threshold), 0.5 minutes (objective);

Night Vision (NV), Optics, and aiming lights training;

Wireless Simulated weapons;

Marine Corps Combat Marksmanship Program, and

Rifle Combat Optics (RCO) Range Exercises.

The fielding of this capability began in July 2006 and will be completed 2nd quarter FY07.

The obsolescence upgrade will replace the Primary Simulation Computer (PSC) and Instructor Control Station (ICS) computer with an ISMT-MSG equivalent computer. This upgrade will also reduce the number of ISMT variants for compatibility. The fielding is anticipated to begin 1st quarter FY08.

Indoor Simulated Marksmanship Trainer- Marine Security Guard (ISMT-MSG)

The ISMT-MSG will provide MSG Detachments around the world a non-live fire training system, in order to sustain and maintain marksmanship, weapons handling, and support training deadly force application decision-making skills. The system will consist of simulated weapons instrumented to enable engagements in various video and computer-generated scenarios relevant to real world warfare situations. The system will be used indoors within permanent training rooms as well as in operating office spaces within Embassies, Consulates and Bachelor Enlisted Quarters worldwide. It will be a man portable, user-friendly, digital-based, interactive system, that realistically replicates the firing capabilities of small arms weapons, in a variety of environments and target array options. This system will support training MSG marksmanship skills with the M9 service pistol, the M16A4/M4A1 service rifle, and the M870 Remington (military) Shotgun. The system will also provide USMC and State Department qualification courses of fire, field firing, and judgmental shooting situations. The fielding of the trainers began in July 2006 an will be completed the 2nd quarter of FY07.

Medium Tactical Vehicle Replacement - Training System (MTVR-TS)

The current MTVR-TS contracting effort is designed to upgrade and standardize the courseware now used in the electronic classrooms (EC) at Camp Johnson, NC and Fort Leonard Wood, NC. As part of this project, Web- and CD-based courses will also be created to provide "classroom" training on the MTVR and HMMWV to Incidental Motor Vehicle Operator (IMVO) candidates. Completion of this project is scheduled for 3rd quarter FY07.

Reconfigurable Vehicle Simulator (RVS)

The RVS is being procured to train Marines in basic and advanced convoy skills using variable terrain and roads in a variety of weather, visibility, and vehicle operational conditions. The RVS incorporates small arms and crew served weapons. Additionally, the RVS training program will provide proficiency for the following tasks: convoy and weapons engagement skills training; identification and avoidance of danger zones; react to contact, call for fire and close air support; dismount and prepare for dismounted fire and maneuver; and shoot on the move. The RVS will be designed for unit training and/or to sustain convoy operations proficiency of crews so they will be able to perform critical skills required in combat. The RVS, like the Virtual Combat Convoy Trainer - Marine, is a mobile, self-supporting trailer, with 360 degree field of view capability, but incorporates two mock-up HMMWVs in a single trailer, where the VCCT-M has only one mock-up HMMWV.

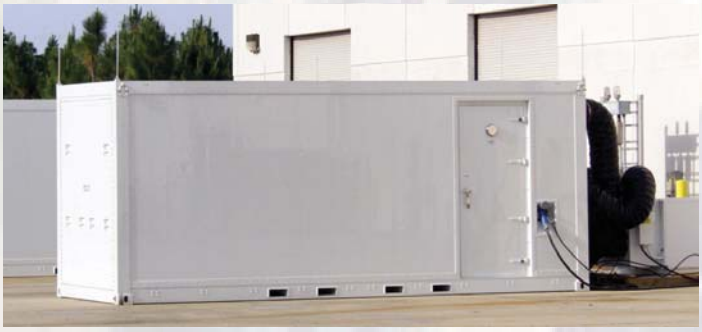
The Commander Marine Forces Reserve has procured two RVS trailers, which will interoperate with their current VCCT-Ms in order to have six vehicles in a convoy training operation. The Reserves will take delivery of these two trailers in July 2007.

Fielded Systems Supported by APM Virtual

Listed below are fielded systems receiving life cycle sustainment support from APM Virtual

Combat Vehicle Training System (CVTS)

CVTS-M1A1, which is a fully self-contained, land-based training system, provides the Marine Corps the ability to train M1A1 crewmembers to approved standards of combat skills and readiness. The CVTS-M1A1 provides gunnery proficiency, weapons platform familiarization, and tactical training. The CVTS-M1A1 land-based training system is comprised of relocatable and mobile configurations.
The relocatable configuration is housed in its own shelter with AC unit and power supply. The mobile configuration is housed in its own shelter with AC unit and power supply, but is on a mobile trailer.



The CVTS-M1A1 is fielded at the following locations: fielded at Marine Bases Camp Lejeune, NC, Camp Pendleton, CA, the Marine Air Ground Task Force Training Center, 29 Palms, CA and other Marine Force Reserve locations.

High Mobility Multi-purpose Wheeled Vehicle (HMMWV) Egress Assistance Trainer (HEAT)

The HMMWV Egress Assistance Trainer (HEAT) device is one the final steps in an overall Vehicle Safety Training Program. HEAT is intended to instill the training necessary to survive a rollover and understand how to egress from an inverted vehicle by emphasizing teamwork and developing muscle memory through crew/battle drills. HEAT trainers are available at Mohave Viper, 29 Palms. When HEAT is fully fielded they will be at Camp Lejeune, NC; Camp Pendleton, CA, MCB Quantico, VA; MCB Okinawa Japan, MCB Kaneohe Bay, HI, and MarDet Fort Leonard Wood, MO.

Javelin Basic Skills Trainer (BST) (Indoor)

The BST (Indoor) is used to provide target acquisition and target engagement practice in a classroom environment using simulated targets in lieu of an actual Javelin. The BST is a three-dimensional training device, consisting of an Instructor Station and a Student Station. A computer in the BST Instructor station generates battlefield scenes. The scenes provide a wide range of training situations to which the gunner must react using the Student Station. The exercises are developed from a set of terrain data (e.g. desert, rolling, built-up), scenarios (target paths), weather conditions (e.g. clear, rain), run times (1 to 7 minutes), and malfunctions (e.g. hang-fire, misfire). The Javelin BST is designed as a classroom or shipboard trainer.
The BST (Indoor) is available at the following locations: Marine Corps Bases, Camp Lejeune NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA , the Marine Air Ground Task Force Training Center, 29 Palms, CA, and

other Active and Reserve Marine Operational Forces and Supporting Establishments Reserve locations.

Improved Moving Target System (IMTS), Stinger

The IMTS Stinger provides training to STINGER missile gunners by presenting aircraft targets to students in a controlled training environment, which represents types and flight paths that may be encountered in a defined area.

The IMTS Stinger is located at the following locations: Marine Corps Base Camp Pendleton, Ca, Marine Corps Air Station, Cherry Point, NC, and Marine Corps Base, Okinawa, Japan.

Indoor Simulated Marksmanship Trainer-Enhanced (ISMT-E)

The Indoor Simulated Marksmanship Trainer - Enhanced is an interactive audio/video weapons simulator that provides enhanced marksmanship training, weapons employment training, and tactical decision making training for a variety of small arms. The training system consists of infantry weapons that are instrumented with lasers which enable Marines to simulate engaging numerous target types in lanes, video, and computer generated imagery (CGI) scenarios. The scenarios replicate range firing for qualification on basic infantry weapons, tactical weapons employment training, and shoot/no-shoot decision making drills, indirect fire training that supports marksmanship training, ITS, annual rifle qualifications, recruit training, formal schools, and MOS specific training. The ISMT Program was upgraded with new wire-less M4A1 and M16A4 simulated weapons to provide enhanced night vision and day optics training to fleet Marines. Over 550 ISMT systems are employed at Marine Corps Bases Camp Lejeune ,NC, Camp Pendleton, CA Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Center, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and supporting establishments (Embassies) around the world.

Light Armored Vehicle Full Crew Interactive Simulation Trainer (LAV-FIST)

The LAV-FIST is an appended trainer for the LAV-25. It is designed to provide familiarization, proficiency, and sustainment training to the LAV-25 crew. The LAV-FIST will provide individual training for crewmembers, as well as, complete coordinated crew training. The system will provide training in the skill areas of gunnery, crew coordination, and tactics.

The LAV-FIST is available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, the Marine Air Ground Task Force Training Center, 29 Palms, CA, and other Marine Corps Reserve Operational Forces.

Light Armored Vehicle (LAV) Turret Trainer

The LAV Turret Trainer is a stand-alone training device that uses microprocessors, a videodisc player, and mockup assemblies to simulate the LAV turret operations and precision gunnery effects. This device was fielded in 1981.
The LAV Turrett Trainer is available at the following locations: Marine Corps Bases, Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, the Marine Air Ground Task Force Training Center, 29 Palms, CA, and other Marine Corps Reserve Operational Forces.

Medium Tactical Vehicle Replacement - Operator Driving Simulator (MTVR-ODS)

The Marine Forces Reserve (MFR) procured Medium Tactical Vehicle Replacement (MTVR) Operator Driving Simulators for training vehicle operators at east and west coast MFR training sites. The trainers utilize a manufactured cab with an MTVR specific dash set, three degrees of freedom seat motion for the driver, and 180 degrees visual display. The trainers were installed at Las Vegas, NV and Red Bank, NJ. The Las Vegas trainer is a permanent installation within an existing facility and the Red Bank trainer is a trailer mounted mobile system. The Operator Driving Simulators were fielded 1st quarter 2006.

Medium Tactical Vehicle Replacement Training System (MTVR-TS)

The MTVR-TS is an operator and maintenance training system designed to support the Marine Corps new medium tactical vehicle. The MTVR-TS is comprised of a mix of operator driving simulators (ODSs), electronic classrooms (ECs), and interactive EC-based courseware that together provide the basis for all Motor Transport (Occupational Field 3500) training in the Marine Corps at the Formal Learning Centers.
The Motor Vehicle Operator Course (MVOC) is conducted at Fort Leonard Wood, MO and teaches the principles of vehicle operation utilizing the ODSs and ECs. The Automotive Organizational Maintenance Course (AOMC) is conducted at Camp Johnson, NC and teaches the principles of vehicle maintenance utilizing the ECs and actual tactical vehicles. Additionally, ODSs located at Camp Courtney, Okinawa support sensitive, on-island driver training for III MEF operators in Japan.

Precision Gunnery Training System 2 - TOW Indoor

This trainer is used to train Tube-launched, Optically tracked, wire-guided (TOW) gunners from novice through

advanced (sustainment) levels of skill.
The PGTS 2 - TOW Indoor is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA, Okinawa, Japan, the Marine Air Ground Task Force Training Command, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and Supporting Establishments.

Precision Gunnery Training System LAV-AT

The trainer provides LAV-AT gunner indoctrination, tracking instruction, practice, and qualification for the TOW (Tube-launched, Optically-tracked, Wire-guided) Weapons System. The trainer consists of an instructor console, LAV-AT interface. A target set (including vehicle adapters), and a missile simulation round. The missile simulation round is the same size, shape, and approximate weight as the tactical TOW missile.
The PGTS LAV-AT is available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, and Quantico, VA.

Virtual Combat Convoy Trainer - Marine (VCCT-M)

The VCCT-M trains Marines in basic and advanced combat convoy skills using variable terrain and roads in a variety of weather, visibility and vehicle conditions. The VCCT-M is a mobile, self contained and self supporting virtual simulation system that utilizes a HMMWV mock-up, small arms, crew served weapons, a 360 degree visual display, and after action review capability. The trainers were procured for Commander Marine Forces Reserve. One suite (4 trailers) is currently employed at 29 Palms and the half suite (2 trailers) is employed to Reserve locations throughout the mid-Atlantic region.

Constructive Training Systems Development

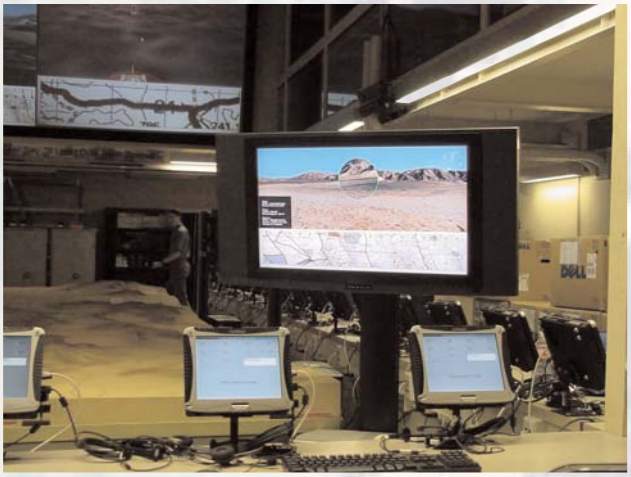
LtCol Gregory Caldwell
Assistant Program Manager for
Constructive Training Systems Development

Mission: To develop, procure and field Constructive Training Systems.

Vision: Effectively and efficiently develop, procure and field Constructive Training Systems that satisfy approved Marine Corps training requirements and are capable of supporting Interoperability and Joint level training.

Programs:

Combined Arms Command & Control Training Upgrade System (CACCTUS)



The CACCTUS project will provide interoperability between the CAST trainer and other Marine Corps Air and Ground Training devices. It will provide fire-support training for the MAGTF elements up to and including the MEB level. CACCTUS will upgrade the existing CAST training systems and provide enhanced 2D and 3D visualization of the battlespace, scenario development based upon training objectives and an after action review capability that depicts specific events that can be used as teaching points for improvement of team skills. The upgrade will incorporate command and control systems and a reconfigurable communications capability. All five CAST-training systems will be integrated through a common network architecture and will provide the ability to accomplish distributed training. The CAST training system will be capable of integration with other Marine Corps Air and Ground Training systems in order to provide fire support training for the MAGTF elements up to and including the MEB level.

The CACCTUS Program began as an Advanced Concepts Technology Demonstration (ACTD) initiative in FY00 with a goal to demonstrate training enhancements afforded by current modeling and simulation (M&S) technologies. A prototype system was defined, developed, and installed at the Twentynine Palms, CA CAST facility in FY03 for user evaluation and feedback in an ongoing spiral development process.

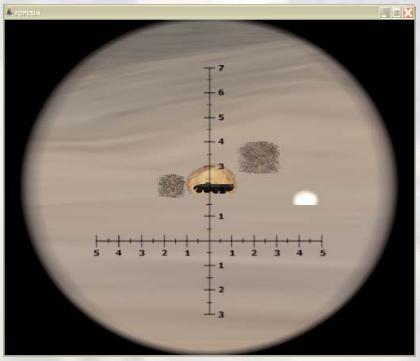
The lessons learned are being used to further refine requirements and incorporate future systems to build the foundation for the Combined Arms Command and Control Trainer Upgrade System (CACCTUS) program that will be deployed to all five USMC CAST facilities: MAGTFTC, Twentynine Palms, California; Marine Corps Base Hawaii (MCBH) Kaneohe Bay, Hawaii; Camp LeJeune, North Carolina; Camp Pendleton, California; and Camp Butler, Okinawa.

CACCTUS is envisioned as a pivotal component in USMC M&S offerings and provides the overarching architecture to support live, virtual, and constructive (L-V-C) training and interoperability with existing and emerging USMC training. Demonstration of the CACCTUS (L-V-C) system is to be completed to meet Full Operational Capability (FOC) in FY09. CACCTUS will also serve as the USMC component of the Joint National Training Center (JNTC) to be completed to meet FOC in FY11.

Deployable Virtual Training Environment (DVTE)

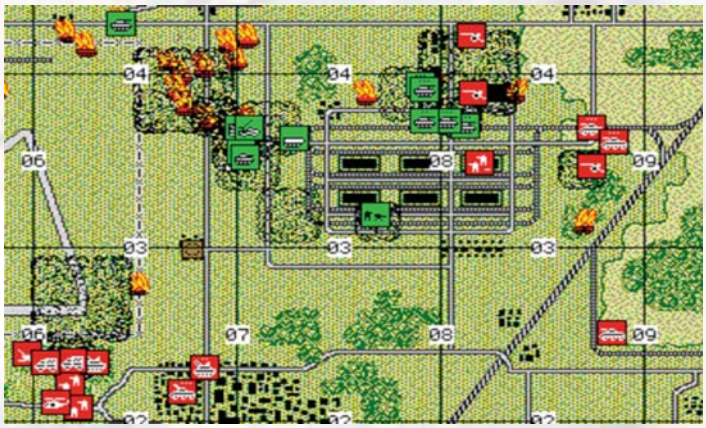
DVTE is a first person skills sustainment trainer that trains Marines from the individual to battalion staff level by using a simulation network with reconfigurable workstations capable of emulating a vast array of training scenarios. DVTE is made up of two components; the first is the Infantry Tool Kit (ITK) which contains several Tactical Decision-making Simulations (TDS). The other half of DVTE is the Combined Arms Network (CAN). This is a set of PC based simulators (FO, FAC, AAV, M1, LAV, AH-1) connected to Joint Semi Autonomous Force (JSAF). PMTRASYS recently accepted delivery of the Virtual Fire Support Trainer (VFST) which incorporates much of the CAN functionality. VFST interfaces JSAF with AFATDS and the PFED to facilitate training of a variety of fire support platforms using Marine Corps gear. Individual MAGTF skills can be trained in this virtual environment using a semi-autonomous force model as its basis. DVTE responds to the need for a flexible, deployable, training system that provides combined arms, MAGTF and Naval Integration training. Currently a prototype desktop training network, the DVTE addresses a significant subset of USMC combined arms training. DVTE provides a custom-built standalone Combined Arms Network (CAN) covering most USMC ground and air weapon systems, and is a USMC capability for providing interoperability with other JNTC participants. This interoperability will also enable distributed interactive unit training for widely separated units.

FOPCSim is a Call for Fire Simulator that was developed by Marines at the Naval Postgraduate School using Delta 3D. Based on Marine Corps and Army doctrinal publications, FOPCSim allows users to conduct basic call for fire training on actual 29 Palms terrain. Each mission is scored based on the Ft. Sill Observed Fire grading standard. FOPCSim has realistic enemy targets which the user must correctly identify and then determine the correct munitions to engage it with.



To date FOPCSim is being used throughout the Marine Corps. It has also been evaluated at the school level at The Basic School and Infantry Officers Course in Quantico, VA. FOPCSIM is available across the DOD for free in a downloadable version. Development on FOPCSim is primarily based on user input and includes the introduction of moving targets, improved networking capability, and enhanced Call For Fire capabilities.

DVTE also serves as a platform for delivering individual and team training simulations with the Infantry Tool Kit including the USMC Tactical Decision-making Simulations (TDSs). Individuals, fire teams, squads, and platoons can train everything from patrolling with or without vehicles and convoy training, to conducting an ambush and sweeping for Improvised Explosive Devices. These TDS tools provide staff training for command and control, fire support coordination, and staff team interaction. For unit training the TDS tools provide combined arms training, small unit tactics, and teamwork skills. Team training tools provide for fire team tactics, teamwork and leadership skills, as well as tools to develop individual decision making skills. Another addition to the DVTE is the Tactical Iraqi program which will allow Marines to train mission specific language and cultural situations during pre-deployment workups to



support Operation Iraqi Freedom. DVTE suites are currently being fielded to II Marine Expeditionary Force (MEF) with fielding to I and III MEF planned for the near future. The following discusses the Tactical Decision-making Simulations in detail.

Below are the five TDSs available via DVTE:

Tactical Operations Marine Corps (TacOpsMC)

TacOpsMC, a Combat Engineering TDS developed for the Engineers School, is a PC-based, fast-paced, and tactically realistic turn-based simulation. The intent is for students, or the training audience, to be presented with a tactical situation for which they develop a plan. The students will then wargame their plan using the simulation, to provide feedback. The changing nature of the enemy will also force rapid decision-making. The simulation is modeled to simulate the execution of combined arms operations

at the Company and Battalion level and will cause the Engineer Officers to apply all of their critical thinking and decision-making skills while operating as a part of a simulated MAGTF. Repeated simulation play will enhance their skills as commanders and planners. The simulation can be played in a competitive free play mode to develop combat decision-making skills. The simulation can also be used as part of a command post exercise scenario where planning is done prior to the simulation, then simulation data is used to provide feedback. Command and Control and Communications personnel can be trained using the

command post exercise mode. TacOpsMC is based on the commercial product "Tactical Operations" by Maj I. L. Holdridge, USMC (Ret). TacOpsMC supports 30+ participants on a LAN. See Maj Michael L. Muller's article, "TacOpsMC: A New Training Tool," in the June 2004 Marine Corps Gazette.

Close Combat: Marines (CCM)

CCM is a real-time strategy TDS that teaches tactics at the squad, platoon, and company levels. The target audience is Non-Commissioned Officers (NCOs), Staff NCOs, and junior officers. It is designed to supplement field exercises, allowing instructors to create their own scenarios. The training scenario duration is generally limited to less than two hours with up to six players in various configurations of one-to-one, one-to-many and many-to-many. In the one to one configuration, a Marine can engage another Marine or fight the computer's Artificial Intelligence. CCM was developed by Atomic Games and was based on the commercial Close Combat series. A copy of CCM was included in the September 2004 issue of the Marine Corps Gazette.

Combat Decision Range (CDR)

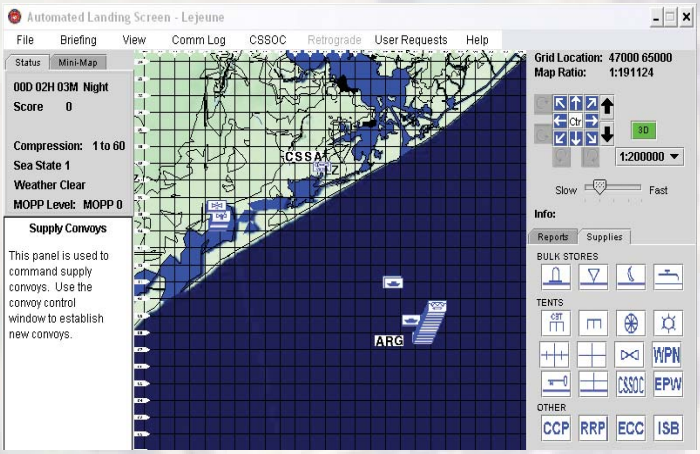
CDR is a PC-based, event-driven decision-making simulation. A Marine is provided video clips of a real-world situation, played out by both Marines and actors. The video leads to a series of events; each target event requires a decision to be made by the trainee. CDR provides a number of decision branches that facilitate the trainee's freedom to choose his own

(most logical) courses of action. CDR training is best performed under the guidance of a trained facilitator. CDR was developed by GAMA Corporation for the Marine Corps Warfighting Lab. An enhanced version of CDR, Combat Decision Range 2, is currently under development.

Marine Air/Ground Task Force XXI (MAGTF XXI)

MAGTF-XXI is a battalion, Battalion Landing Team, and Marine Expeditionary Unit (MEU) Command and Control (C2) real-time strategy TDS that teaches tactics at the company, battalion landing team, and MEU levels. The target audience is Captains and Staff NCOs. MAGTF XXI can be used to help MEU commanders develop warfighting skills by allowing them to plan the battle, fight the battle, and review the battle. At the start of training, trainees produce, via Command and Control Personal Computer or MAGTF XXI, all graphical and text-based products to support their military planning process. During this process, trainees collaborate on shared graphical overlays and text-based plans. When trainees are ready, they can activate the simulation and fight their plan against other players or a computer-directed enemy. During the exercise, trainees can work together to revise the plan and issue changes to subordinate unit commanders. They can manage the deployment of assets and control maneuvers, and then view the results through an eagle-eye battlefield view, panning and zooming in on the battle. At the end of the exercise, MAGTF-XXI provides charts and tracking information to determine the success of the battle plan, as well as a full recording of the exercise for later review. MAGTF XXI was developed by Mäk Technologies.

Logistics TDS



The Logistics TDS under development for the Logistics Operations School is a real-time strategy simulation targeted at training battlefield logistics to Lieutenants and Staff NCOs in the 0402 Logistics Officer and 0491 Combat Service Support Chief Military Occupational Specialties (MOS). The objective of the Logistics TDS is to leverage existing technology to develop a fast-paced, realistic logistics simulation that will force logisticians to apply all of their critical thinking and decision-making skills to insure that their Marine Expeditionary Unit (MEU) is operationally and logistically successful. The TDS allows the student to primarily serve as a Combat Service Support Operations Center (CSSOC) Watch Officer with the MEU Service Support Group (MSSG) and use Combat Service Support personnel and equipment in order to support the mission. Repeated simulation play is designed to enhance their skills as adaptive logistics commanders and planners. The mission of the Logistics TDS is to teach Marines how to plan for the full spectrum of Combat Service Support in a forward deployed, expeditionary environment while enhancing the Marine's awareness of Combat Service Support. The Logistics TDS uses the best commercial practices and the latest video simulation technology to provide users with several unique MEU mission scenarios. Key logistics doctrine, concepts, and principles are highlighted by the play in each scenario. The Logistics TDS was developed by Technologies To Be, Inc.

Virtual Battlefield System 1 (VBS1)

VBS1 was developed as part of the Deployable Virtual Training Environment (DVTE) Infantry Toolkit (ITK). VBS1 is an adaptation of the game Operation Flashpoint from Bohemia Interactive Studio. It is designed as an interactive, three-dimensional synthetic environment in which small unit tactics may be practiced among team members. Photo-realistic terrain, user-definable mission scenarios, and variable environmental conditions enhance the team training experience. VBS1 provides the ability to operate a myriad of land, sea, and air vehicles across large outdoor terrains and allows free-play within scenario-based training missions. It supports 32 users on a local area network or across the Internet. The Marine Corps has recently purchased an unrestricted license to use VBS1 thereby eliminating the USB security key. Plans are underway further enhance our capabilities and purchase an unrestricted license to use VBS2. VBS2 will have an extensive tool set that will allow the user to create a wide variety of training environments including those using geo specific terrain.

Copies of TacOpsMC, CCM, CDR, MAGTF XXI, and Log TDS are available now, free of charge, for all Marines. They can be downloaded from the Training Mission Support Center (TMSC): http://www.usmc-tds-msc.com/

MAGTF Training Systems Support (MTSS)

MTSS effort encompasses training support in the areas of command and control systems and supporting C4I applications, technical simulation support services, I/T Instruction and Support Services for MSTP, I MEF, II MEF, III MEF, the MAGTF Training Command located in 29 Palms, MARFORPAC, MARFOREUR, MCAS Yuma, Marine Corps University in Quantico and SCETC. This program includes but it not limited to providing support services for training activities employing current fielded modeling and simulation systems, the operation of designated information systems (and follow on versions thereof), development of supporting training documentation, advisor training, and the need for contractor personnel conversant in training support technology. In addition, this program provides the ability to evaluate emergent training support technologies. The supported training audience encompasses Marine Corps unit commanders and their staffs, the Marine Corps education establishment, Marines under training, developers of training systems, conceptual experimenters, and future evolving activities supporting the Marine Corps.

MAGTF Tactical Warfare Simulation (MTWS)

MAGTF Tactical Warfare Simulation (MTWS) is the Marine Corps' only aggregate-level constructive simulation system designed to support the training of tactical commanders and staff, from battalion through MEF level, in operational staff planning and Command and Control (C2) processes and procedures. The system provides interactive, multi-sided, force-on-force, real-time modeling and simulation with stand-alone tactical combat scenarios for air, ground, surface, and amphibious operations. With interfaces to fielded Marine Corps C4I systems such as Command and Control Personal Computer (C2PC) and Intelligence Operations Server (IOS), MTWS provides the battle staff the ability to seamlessly train with and use their C4I systems during the execution on an MTWS supported training event. Through the implementation of a High Level Architecture (HLA) interface between MTWS and the entity-level Joint Conflict and Tactical Simulation (JCATS) system, high-resolution tactical objectives can be simulated in JCATS and reflected within the context of a larger operational scenario conducted in MTWS. MTWS has been the combat simulation system used to support I MEF and II MEF Mission Rehearsal Exercises (MRX) prior to OPERATION IRAQI FREEDOM deployment, MEF-level exercises at III MEF, Weapon and Tactics Instructor (WTI) course in Yuma, Eastern Cross exercises at the Expeditionary Warfare School, coalition exercises with the Royal Thai Supreme Command, and numerous battalion Command Post Exercises (CPXs).

MTWS Version 3.4 is scheduled for release in December 2006 and will include C4I interfaces to the Marine Air Command and Control (MACC) system via Tadil J / Link 16 messaging and enhanced terrain mapping functions using Vector Product Format (VPF) maps.

MTWS is available at the following locations: Marine Corps Bases Camp Lejeune, NC; Camp Smedley D. Butler, Okinawa, Japan; Camp Pendleton, CA; Quantico, VA; and the Marine Air Ground Task Force Training Command, 29 Palms, CA..


U.S. MARINES

Fielded Systems Supported by APM Constructive

Listed below are fielded systems receiving life cycle sustainment support from APM TOS

Combined Arms Staff Trainer (CAST)

CAST is a computer-aided simulation system used to train Marines in the proper employment and coordination of fire support assets in support of the ground commander's scheme of maneuver. The CAST is used to emphasize the detailed planning and coordination required to develop, execute, and validate a particular scheme of maneuver and its fire-support plan. The process utilized in the CAST requires each echelon in the fire support command to communicate and properly execute their respective functions before the requested support materializes. The trainer is used to allow the using units to prepare, test and refine operation orders, including supporting arms requirements, in response to both friendly and opposing forces scenarios. The CAST is available at the following locations: Marine Corps Bases Camp Lejeune, NC Camp Pendleton, CA, Okinawa, Japan, and Hawaii.

Advanced Distributed Learning

Ms. Anne Sullivan
Assistant Program Manager for
Advanced Distributed Learning

ADVANCED DISTRIBUTED LEARNING

The Advanced Distributed Learning (ADL) initiative began within the Department of Defense (DoD) as a strategy to modernize training and education. This strategy was developed in response to the 1997 Quadrennial Defense Review (QDR). The intent of the strategy was to provide DoD personnel access to training and education that was tailored to their individual needs and to deliver this training whenever and wherever it was needed in an efficient, effective and affordable manor through the use of technology.

Executive Order 13111, which was signed in January 1999, tasked DoD to lead the development of common specifications and standards for technology-based learning in both the federal and private sectors. Shortly thereafter, the initial draft of the Sharable Content Object Reference Model (SCORM®) was developed. SCORM® incorporates emerging standards and specifications into one common reference model for use by both sectors. The current version of this standard is SCORM® 2004.

In 1999, DoD created a Strategic Plan to guide distributed learning initiatives. DoD also established the ADL Co-Lab at the Institute for Defense Analysis (IDA) to foster collaborative research and development, evaluate common tools and develop standards and guidelines for the ADL initiative. Since then, other co-labs, partnership labs, and ADL centers have been established to create an ADL Co-Lab Network. In May 2000, the ADL Implementation Plan was developed to provide a framework for the federal government on implementing the strategic plan.

ADL is implemented within the Marine Corps through the Distance Learning Program (MCDL) also know as MarineNet. This is the USMC-wide, E-learning Infrastructure that enables Marines to receive training via the appropriate interactive media, when and where the learning is needed. DL provides a greater population of Marines access to learning resources and performance support tools and increases the effectiveness of training and education through the use of technology and improves operational readiness.

MCDL is an Acquisition Category III Information Technology (ACAT III-IT) program that is co-managed by PM TRASYS and the Training and Education Command (TECOM) College of Continuing Education (CCE). PM TRASYS is responsible for the procurement, integration, installation and life-cycle support of the system while CCE is responsible for providing the requirements, standardization of ADL within the Marine Corps IAW ADL standards and the development of content to run on MarineNet. The program also provides information on ADL standards in general as well as specific information and guidance to include a style guide and technical specification to other Marine Corps Systems Command Project Managers who are developing DL products to be hosted on MarineNet.

The Marine Corps collaborates with other services and DoD organizations through its participation in numerous forums. One of those forums is the Joint ADL Co-Lab in Orlando. Part of their mission is to assist the services in resolving problems in implementing ADL. The PM for Training Systems serves as a member of the Board of Directors and the DL Project Officer serves as the Associate Director for the Marine Corps.

Additional information on Marine Corps Distance Learning can be found at www.marinenet.usmc.mil.

Additional information of ADL can be found at www.adlnet.org.

Distance Learning (DL)

Distance Learning (known as MarineNet) is the USMC E-Learning Infrastructure that enables Marines to receive training and education via the appropriate interactive media, when and where the learning is needed. DL provides access to learning resources and performance support tools to a greater population of Marines. DL increases the effectiveness of training and education through use of technology. DL contributes to the Marine Corps' operational readiness by providing all Marines with access to military occupational specialty (MOS) and common skills training opportunities and Professional Military Education (PME). DL capabilities fill critical gaps in the training and education continuum and can reduce the amount of time Marines are required to be away from their

home duty station attending formal training. DL gives the commander a better-trained Marine while increasing personnel availability to accomplish the unit's mission.

The Distance Learning program consists of commercial-off-the-shelf (COTS) hardware and software that is that runs on the Navy/Marine Corps Intranet (NMCI)/Marine Corps Enterprise Network (MCEN). Various Distance Learning suites have been fielded to major Marine Corps bases and stations.

Distance Learning components are as follows:

- Content Delivery Engines (CDE) (Network Appliances that host content)
- Centralized Learning Management System (LMS) for Student Administration
- Learning Resource Centers (LRC)
- Video Teletraining Training (VTT) Centers
- Deployable Learning Resource Centers (DLRC).

Learning Resource Centers are located at Marine Corps bases, stations and detachments worldwide. Locations include Camp Pendleton, Camp Lejeune, Quantico, Okinawa, Iwakuni, Hawaii, MCRD San Diego and MARFORRES.

Content Delivery Engines serve content to both the Learning Resource Centers as well as local base desktop users.

Deployable Learning Resource Centers are located at Camp Lejeune, Camp Pendleton, Okinawa, MARFORRES and 29 Palms for use when deployed aboard ship or in a tactical environment. DLRC Suites are currently bering used as Training and Education Command (TECOM)

classrooms in Iraq. An Internet site provides access to Marines from their homes via their Internet service provider. The Distance Learning program now has more than 2100 courses available. Over 300 of these courses are Marine Corps developed. Some of this year's offerings include pre-deployment training which includes Improvised Explosive Devices and Incidental Motor Vehicle Operator.

For access to this Distance Learning capability, go to: www.marinenet.usmc.mil.

Training Operations Support

Maj Stuart Muladore
Assistant Program Manager for
Training Operations Support

Mission: Provide comprehensive and integrated oversight of all logistics management activities associated with the acquisition and support of Marine Corps ground training systems and/or devices. There are two primary focal points of the Training Operations Support (TOS) team; analysis and recommendation on best business practices for acquisition logistics support, in other words getting the product through the Deployment phase of the Acquisition Life Cycle Management framework, and supporting the product and the Marines using it once it reaches the Operations and Support phase of the Acquisition Life Cycle Management framework.

Training System Acquisition Logistics Support

TOS manages the integration aspects of support for ground training systems and equipment using the MCSC Equipping Process. Throughout the systems development process, TOS provides integrated logistics support to properly influence the system design for cost-effective supportability that meet the needs of the Marine Corps training community. Emphasis is focused on strategically implementing these support considerations early and throughout the acquisition processes.

Minor Training Devices.

The Minor Training Device (MTD) program is an annual reoccurring TECOM initiative that allows Marine Corps units to request training devices or aids that are normally of intrinsically small cost, thus not covered under other POM initiatives, or are viewed as consumable items. The call for candidates is normally addressed through a MARADMIN and has historically been released in the August/September timeframe. Examples of the FY06 approved submissions included: - Rubber and Plastic Weapons (M16A2, AK47, Knives, RPG7) - CPR Manikin - 60/81mm Training Rounds - Casualty Simulation Kits. Once TOS receives the prioritized list from TECOM, coordination regarding shipping destinations and points of contact will be conducted concurrent with the purchases. Units are responsible for the support and upkeep of MTDs. Replenishment or replacement outside of the annual TECOM funded initiative is a unit responsibility.

A Minor Training Device catalog is being developed and will be published on the PM TRASYS web site by the 2nd Quarter FY07. Any suggestions for additions or updates to this catalog would be welcomed and can be submitted to pmtrasys@usmc.mil.

Training Systems Support

Throughout the operations and support phase of the training system life cycle, TOS manages an array of Government and Contractor programs that provide operation, maintenance, and modifications/upgrades to fielded training systems and live fire ranges world-wide. The primary objective of this phase is to maximize performance and availability of fielded systems and support equipment, examples of these support programs include:

In-Service Engineering Offices (ISEO), TRASYS Liaison Offices (TLO), Contractor Operation and Maintenance Services (COMS), Contractor Logistics Support (CLS), Contractor Maintenance Support (CMS), Contractor Field Services (CFS), Contractor Supplied Instructions (CSI), Instructional Systems Support (ISS), Warranty, and other Service's support

In-Service Engineering Offices (ISEO) and TRASYS Liaison Offices (TLO)

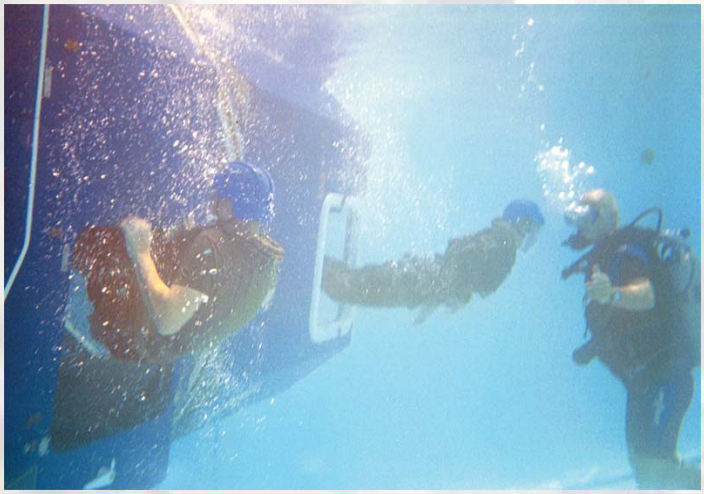
In-Service Engineers are another cost-effective means of life cycle support, configuration management, and engineering support services for fielded training systems. Prior to FY 07, all ISEOs were Naval Air Warfare Command, Training Systems Division (NAWC-TSD) employees supporting PM TRASYS. There were ISEOs located at Camp Lejeune, Camp Pendleton, MAGTFTC 29 Palms, MCB Hawaii and MCB Okinawa, Japan. Starting in FY07, the ISEOs located at Camp Lejeune, Camp Pendleton and 29 Palms were converted to Marine Corps PM TRASYS employees and assumed the title of TRASYS Liaison Office (TLO). MCB Hawaii and MCB Okinawa, Japan will continue to be supported by ISEOs.

TOS coordinates the staffing and management of both the ISEOs and TLOs located at major Marine Corps installations, enabling a direct line of frequent communications with our training system customers, stakeholders and commercial support contractors. Their capabilities include: Technical liaison with commands that possess training systems, development and installation of

quick-response or emergency modifications to training systems, assistance with engineering analysis, feasibility studies, and Cost & Lead-Time Estimates (C&LTE's) for proposed training system change requests, process Training Equipment Change Requests (TECRs) and prepare Training Equipment Change Directives (TECDs) for training systems hardware, software, and documentation modifications, assist with Training Situation Analyses (TSA), Manpower and Training Analyses, and Facilities Analyses, assist project engineers and integrated project teams with development and acceptance of training systems, and assist installations with the disposal of training systems.

Modular Amphibious Egress Trainer (MAET)

MAET provides egress training for non-aircrew flyers as well as for other vehicle crews and passengers. MAET simulates underwater disorientation caused by rapidly sinking vehicles, aircraft or amphibious vehicles. With the use of modular panels, this system replicates aviation platforms such as, but not limited to, the CH-46, CH-53 and the MV-22, as well as other ground vehicles, such as the LAV-25, AAV and EFV. The trainer serves as a portion of



an overall survival training program for non-aircrew "frequent flyers" that includes Shallow Water Egress Training (SWET) and Intermediate Passenger Helicopter Aircrew Breathing Device (IPHABD) familiarization and usage training. The MAET is available at Marine Corps Base Hawaii, Camp Hansen - Okinawa, Japan, and Camp Pendleton, CA. Delivery to Camp Lejeune, NC is scheduled for late FY07 or early FY08 contingent on the construction of the required swimming pool.

Fielded Systems Supported by APM TOS

Listed below are fielded systems receiving life cycle sustainment support from APM TOS

Amphibious Training Demonstrator

The Amphibious Training Demonstrator is used to train personnel of the Navy, Army and Marine Corps in the doctrines, tactics, and techniques for all phases of an amphibious operation.
Using video, slide shows, terrain and sea representations, movable models, and electronic lighting and effects, the trainer can represent a complete amphibious assault.
The Amphibious Training Demonstrator is available at the following location: Expeditionary Warfare Training Group, Atlantic, Little Creek, VA.

Basic Electronics Trainer / Labvolt's Fault Assisted Circuit Equipment Trainer (FACET)

FACET is a desktop computer and printed circuit board interface base station system that instructs the student in basic electronics theories and principles through hands-on lab and Interactive Courseware. This trainer augments the lecture portion of the Basic Electronics Course that all Marine electronics repairmen and technicians must complete and constitutes over 40% of the 51 training day course.
FACET is available at the following location: Marine Corps Communications and Electronics School 29 Palms, CA.

Cardiopulmonary Resuscitation (CPR) Learning System

The CPR Learning System is used to provide cardiopulmonary resuscitation training and certification.
The CPR Learning System is available at the following location(s): Marine Corps Base, Camp Lejeune, NC.

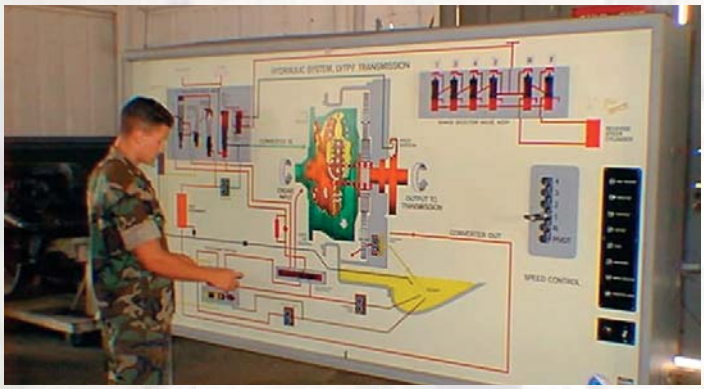
Javelin Field Tactical Trainer (FTT) (Outdoor)

The FTT is used to provide target acquisition and target engagement practice in a range or field environment using simulated or real targets in lieu of using an actual Javelin.

The FTT is used for Situational Training Exercises (STX) or Field Training Exercises (FTX). The FTT with Instructor Station (IS) adds the capability of monitoring, reviewing, and recording gunner activities. The FTT with or without the Instructor Station can be used to train and reinforce gunnery skills. A Javelin Command Launch Unit (CLU) is required, but is not a component supplied with the FTT. The FTT provides visual, aural, and physical cues associated with the Javelin Missile when engaging targets. Visual cues provided by the FTT include simulated Seeker imagery with the appropriate track gate and crosshairs. Aural cues include a simulation of launch signature effects of the Javelin Missile. Weight of the Simulated Round (SR), when connected to the CLU, provides the simulation of the Javelin Missile.

The FTT is available at the following locations: Marine Corps Bases, Camp Lejeune,NC, Camp Pendleton, CA, Hawaii, Okinawa, Japan, Quantico, VA, the Marine Air Ground Task Force Training Center, 29 Palms, CA, and other Active and Reserve Marine Operational Forces and Supporting Establishments Reserve locations.

LVTP-7 Assault Vehicle Display Panel, Transmission Hydraulic System



This trainer is an animated display panel depicting a stylized diagram of the hydraulic flow operation, an animated cutaway view of the converter assembly, a mockup of the speed control unit, and a switching control panel.

The trainer is designed to provide a simplified interpretation of the sequential steps that occur in the operation of the hydraulic system of the LVTP-7 transmission.

The LVTP-7 Assault Vehicle Display Panel, Transmission Hydraulic System is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.

LVTP-7 Assault Vehicle Take Off Power

The trainer is used in the classroom for basic training in the operating principles and general arrangement of components of the LVTP-7 PTA mechanism. The trainer is also used to demonstrate the operation of the LVTP-7 power takeoff assembly, showing the interrelationship of components to each other and to the input gear and output yokes. Trainees are Marine Corp maintenance personnel.

The LVTP-7 Assault Vehicle Take Off Power is available at the following location: Amphibious Assault Vehicle School, Camp Pendleton, CA.

M32A1 Pneumatic Mortar Trainer

The sub caliber mortar trainer is a pneumatically operated attachment designed to adapt a 60-mm or 81-mm mortar to fire the 25-mm training projectile on a 500-inch, 1,000-inch, or 2,000-inch range. The trainer is a unit packed in a case complete with: a projectile rack with twenty 25-mm training projectiles; a barrel and valve assembly, to adapt the operational mortar to receive the 25-mm projectiles and to release compressed air charges for simulating operational mortar fire; a bottle and valve assembly, to provide compressed air supply; a regulator assembly to control the pressure released for each charge; and a quick disconnect

hose assembly, for attaching the air supply to the barrel and valve assembly.
The M32A1 Pneumatic Mortar Trainers are available at the following locations: Marine Corps Bases Camp Lejeune, NC, Camp Pendleton, CA, Quantico, VA and the Marine Air Ground Task Force Training Command, 29 Palms, CA.

Mobile Firearms Trainer (MFT)

The MFT is a trailer-ized live fire range that includes a digital system for displaying targets and scenarios on a screen. Acoustic sensors located alongside the screen to accomplish scoring.
The Mobile Firearms Trainer is available at Marine Corps Base, Quantico, VA.

Main Gun (M1A1) Signature Simulator (MGSS)

The MGSS is used for force on force/MILES/TWGSS training. With the aid of pyrotechnic charges, the purpose of the device is to simulate visibly and audibly the firing of a tank main gun.

Modular Amphibious Egress Trainer (MAET)

The Modular Amphibious Egress Trainer provides egress training for non-aircrew flyers as well as for other vehicle crews and passengers.
MAET simulates underwater disorientation caused by rapidly sinking vehicles, aircraft or amphibious vehicles. With

the use of modular panels, this system replicates aviation platforms such as, but not limited to, the CH-46, CH-53 and the MV-22, as well as other ground vehicles, such as the LAV-25, AAV and EFV.
The trainer serves as a portion of an overall survival training program for non-aircrew "frequent flyers" that includes Shallow Water Egress Training (SWET) and Intermediate Passenger Helicopter Aircrew Breathing Device (IPHABD) familiarization and usage training.

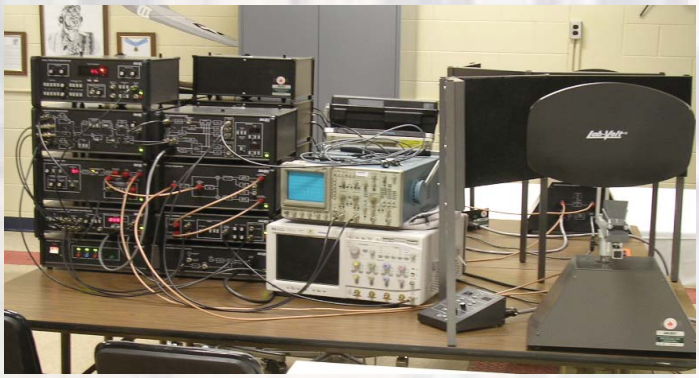
The MAET is available at Marine Corps Base Hawaii, Camp Hansen - Okinawa, Japan, and Camp Pendleton, CA. Scheduled for future delivery to Camp LeJeune, NC.

Radio Fundamental Maintenance Training System / NIDA Model 205B

The NIDA model Radio Fundamental Maintenance

Trainer/NIDA Models 205B is used to enhance the student's understanding of troubleshooting techniques for basic radio circuitry. The trainer has two basic configurations: AM Transmitter Trainer & Narrow Band FM Transceiver Trainer. The NIDA trainers are used as part of the Marine Corps Communication Electronics School (MCCES) formal training.
The Radio Fundamental Maintenance Trainer/NIDA Model 205B is available at the following locations: Marine Air Ground Task Force Training Command, and 29 Palms, CA.

Radar Fundamentals Training System



The Radar Fundamentals Training System a miniature scale live functional radar system used to teach the fundamentals of analog and digital radar theory. Students will build he radar as they progress through the course, learning the various components and how they interact as well as learning principles of radar jamming from natural and electronic warfare sources.
The Radar Fundamental Maintenance Training System is available at the following locations: Marine Air Ground Task Force Training Command, 29 Palms, CA.

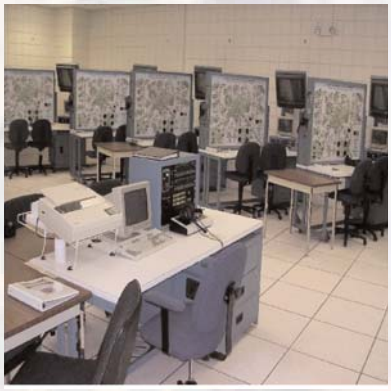
Tactical Radar Threat Generator TRTG)

Marine Corps Air Ground Combat Center Tactical Training and Exercise Control Group use the TRTG during Combined Arms Exercises. It is used to enhance aviation training by simulating an enemy "radar threat" for pilots participating in the exercise.
The TRTG is available at the following location: Marine Air Ground Task Force Training Command, 29 Palms, CA.

Terrain Multi-purpose Model

The Terrain Multi-purpose Model is intended for Junior and Senior officers and command staff personnel to utilize for orientation and briefing for logistics and combat involved in marine amphibious assault operations.
The Terrain Multi-purpose Model is available at the following location: MCB Quantico, VA.

Universal Maintenance Training System (UMTS)



The UMTS is a networked motor transportation panel training system that provides realistic troubleshooting and operational training for maintenance personnel tasked with support of system related to diesel engines and hydraulic subsystems. The station allows control and operation of the simulated equipment represented by the following display panels:
..- 11H118/4 Tactical Vehicle Wiring and Lighting System
- 11H118/6 Airbrake and Air Operated Accessory System
- 11H118/8 LVS Auxiliary Hydraulic Systems
- 11H118/9 LVS Hydraulic Steering System.

The UMTS is available at the following location: MCCSSS, Camp Johnson, NC.

Training Technology Development

Mr. Martin Bushika
Assistant Program Manager for
Training Techology Development

Mission: To develop and transition valued technologies to Marine Corps ground training.

Sponsors and Partners: Training and Education Command (TECOM) (Technology Division), US Special Operations Command (USSOCOM), Defense Advanced Research Projects Agency (DARPA), Joint Improvised Explosive Device Defeat Office (JIEDDO), Office of Naval Research (ONR) (Expeditionary Warfare Division), Marine Corps Reserve Force (MARFORES), Marine Corps Warfighting Lab (MCWL), Headquarters Marine Corps (Manpower and Reserve Affairs), and Joint Advanced Distributed Learning Co-Laboratory. Together TECOM, MCWL, ONR, and PM TRASYS form the Marine Corps Ground Training Systems Consortium.

Program Thrusts:

- Tactical decision-making simulation technology
- Language and culture training technology
- Synthetic environment technology

General:

As the USSOCOM and JIEDDO sponsored Technology Development Agent (TDA), PM TRASYS Training Technology Development (TTD) Division develops and then transitions technologies to USMC ground training systems. The TTD Division works very closely with the Technology Developer; with TECOM, the Requirements Developer; with PM TRASYS, the Material Developer; with MCWL; and with the Marine Forces (MARFOR) to develop those technologies that provide the greatest benefit for Marine Corps ground training systems.

PM TRASYS TTD conducts both Applied Research (6.2) and Advanced Technology Development (6.3). Applied research is a systematic study to understand the means to meet a recognized and specific need. It is a systematic expansion and application of knowledge to develop useful materials, devices, and systems or methods. It may be oriented, ultimately, toward the design, development, and improvement of prototypes and new processes to meet general mission area requirements. Advanced Technology Development includes development of subsystems and components and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in a simulated environment. Projects in this category have a direct relevance to identified military needs and demonstrate the general military utility or cost reduction potential of technology when applied to different types of military equipment or techniques.

PM TRASYS TTD programs are training requirements-focused. Any given USMC Mission has a Mission Essential Task List (METL). The METL then determines the Collective Training Standards (CTS) and Individual Training Standards (ITS) required to ensure training readiness for that mission. The CTSs and ITSs are the focus of each PM TRASYS TTD program.

PM TRASYS TTD has implemented a Cognitive Task Analysis/Training Effectiveness Evaluation methodology to provide objective measurement against baseline conditions. Cognitive Task Analyses (CTA) are conducted for projects within each thrust. Each CTA will consist of five stages: (1) Preparation and Domain Familiarization, (2) Knowledge Elicitation, (3) Data Analysis, (4) Knowledge Representation, and (5) Application. Products can include user interfaces, facilitation guides, scenario development, teaching points and identification of performance measures. Training Effectiveness Evaluations (TEE) are conducted on the products of each thrust. Each TEE will incorporate measures at multiple levels to provide a more diagnostic assessment of training effectiveness. Currently, a CTA and TEE are planned for multiple programs of instruction for providing the cognitive skills training needed in support of IED defeat.

Tactical Decision-making Simulation Technology

The USMC Family of Tactical Decision-making Simulations (TDSs) is being developed to demonstrate the effectiveness and affordability of cognitive skills training simulations based on commercial gaming technology for realistic scenario-based training for individual Marines, small units, and Marine Air/Ground Task Force (MAGTF) staffs. The desired capabilities include:

- Near real time development of simulation environment with geo specific data to support Mission Preparation and Rehearsal activities.

- Enhanced integration with real-world Command, Control, Communications, Computers, and Intelligence (C4I) systems to maximize training transfer

- Multi-echelon, multi-player, network compatible with robust After Action Review (AAR) for enhanced team training and teams of teams training

- Multi-scenario high repetition cognitive skills training for all MAGTF elements

- Warfighting experimentation and development of concepts and tactics for use by the Ground Combat Element (GCE), Combat Service Support Element (CSSE), Aviation Combat Element (ACE) and Command Element (CE) of a MAGTF appropriately integrated

- "Marine Corps Tactical Warfare System (MTWS) on a PC" capability that is CD-ROM-based and provides war gaming

- Enhancement to formal instruction

The ultimate purpose of the USMC Family of TDSs is to provide: Affordable training for Marines, anytime, and anywhere!

USMC Family of Tactical Decision-making Simulations

The USMC Family of TDSs teach cognitive (vice psychomotor) tactical decision-making skills for Marine Corps leaders. All current and future TDSs are distributed via Compact Disk (CD) without individual license fees. The training methodology of a TDS involves a three-phased approach:

- Conduct planning based on the Operation Order provided in the scenario

- Execute the plan in the simulation

- Conduct an After Action Review

To ensure that the proper cognitive skills are being taught in the TDSs, PM TRASYS is conducting a Cognitive Task Analysis and a Training Effectiveness Evaluation for each TDS. The research aspects of the family of TDSs include vertical integration of training systems (training teams from different echelons of the MAGTF), horizontal integration of training systems (training teams of teams from different elements of the MAGTF), gaming technology to High Level Architecture interoperability, situational and spatial awareness, C4I to simulation interoperability, cognitive and physical integrated training and recognitional decision-making, all in low-cost, deployable systems. Precursors Some early efforts to create TDSs are well known, such as "Marine Doom" and "Virtual Battlefield Systems" (VBS1).

Marine Doom

Marine Doom was a project of the Marine Corps Modeling and Simulation Management Office from 1995 to 1997. Lieutenant Scott Barnett and Sgt Dan Snyder adapted the game Doom II from Id Software for training four-man fire teams. The game taught concepts such as mutual fire

team support, proper sequencing of an attack, ammunition discipline, and succession of command. It incorporated M16A1 rifles, M249 squad automatic weapons, and M67 fragmentation grenades. Marine Doom supported four players on a network; each player was provided with training objectives and information about potential enemy and friendly units. Marines had to purchase the commercial game Doom II; Marine Doom would not run without the commercial game.

Transitioned (Fielded) Systems PM TRASYS has transitioned the following five TDSs to the Tactical Decision-making Simulation System (TDSS) of the DVTE program.

- Tactical Operations Marine Corps (TacOpsMC)

- Close Combat: Marines (CCM)

- Combat Decision Range (CDR)

- Marine Air/Ground Task Force XXI (MAGTF XXI)

- Logistics TDS

- Virtual BattleSpace One (VBS1)

Systems Under Development

In order to enhance the USMC Family of TDSs, we are interested in conducting research into the:

- vertical integration of training systems (training teams from different echelons of the MAGTF)

- horizontal integration of training systems (training teams of teams from different elements of the MAGTF)

- gaming technology to High Level Architecture (HLA) interoperability

- situational and spatial awareness in a deployable system,

- cognitive and physical integrated training and - recognitional decision-making.

The following TDSs are currently under development:

Close Combat: First to Fight 2 (CC:F2F2)

The CC:F2F2 TDS under development is a "first-person shooter" simulation targeted at small unit leaders. The overall objective of this infantry TDS is to produce a training system that will emulate the tactical combat

environment and allow squad leaders, team leaders, and team members to practice the appropriate cognitive skills in a first-person synthetic environment. First to Fight features the first-ever implementation of "Ready-Team-Fire-Assist" (RTFA), the U.S. Marine Corps' proven system of formations, movement and tactics that Marine fire teams use right now in urban combat. First to Fight's use of RTFA ensures that each of the player's three Artificial Intelligence teammates behaves the way Marines behave in live combat. RTFA guides how Marine fire teams move as a unit safely through streets under siege, cover fire sectors on stairs, take down rooms, use bounding over-watch, achieve multiple angles of fire against enemies, and much more. Because players can trust that their Marines are following RTFA, players can keep their eyes sighted, their fingers firing their weapons, and their minds focused on making the right decisions to bring their teams safely through battle. Destineer Studios is the developer of CC: F2F2.

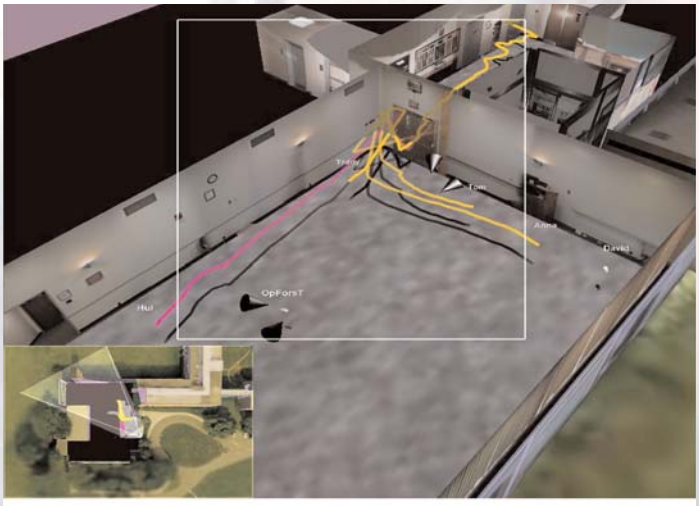
Anti-Terrorism (AT) TDS - Close Combat Marine: AT

The AT TDS developed for the Marine Corps Security Forces (MCSF) Battalion is a PC-based, fast-paced, and tactically realistic computer-based simulation. The AT TDS provides training for armed anti-terrorism and physical security personnel involving the use of deadly force to protect designated installations. The intent is for the training audience to be presented with a platoon-level tactical situation for which they develop a plan. The students will then war game their plan using the simulation to provide feedback. Repeated simulation play will enhance their skills. The simulation can be played in a competitive free play mode to develop combat decision-making skills where planning is done prior to the simulation, then simulation data is used to provide feedback. The AT TDS is being developed by Destineer Studios.

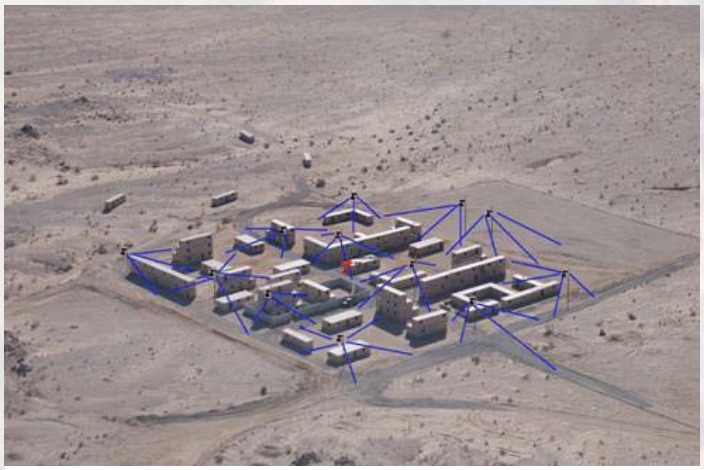
Joint Terminal Attack Controller (JTAC) TDS - Close Combat Marine: JTAC

The JTAC TDS under development will provide the means for JTACs to develop and practice situational awareness for conducting calls for fire and Close Air Support, both fixed- and rotary-wing. The JTAC TDS will have a multi player capability that includes ground elements, as a result, the JTAC trainee will be immersed in a fluid combat scenario, supporting a platoon or company, rather than at a static observation post. This reinforces close coordination (and movement) with the supported ground forces. Destineer Studios is the developer of the JTAC TDS.

Synthetic Environment Technology



Synthetic Environment (SE) technology is being developed to provide a deployable live fire and force on force training capability. The SE technology has been developed to provide the capability to rapidly create geo-specific three-dimensional models of the interior and exteriors of buildings in a MOUT training environment. Real time video integration (Video Flashlights) technology and position



location information technology have also been developed to provide a visualization and tracking capability for small unit members in the context of the three dimensional model. This information is recorded and played back providing precise adjudication of training events and situational awareness during after action review. This technology also provides a mission rehearsal capability. This provides a strong foundation for further development of Automatic Performance Evaluation and Lessons Learned (APELL) technology. For a given training facility the training events including individual position location information, orientation and weapon orientation will be recorded for subsequent analysis. The APELL technology will enable individual and team performance to be assessed based on Marine Subject Matter Expert (SME) guidance. The assessment will enable dynamic scenario modification to accelerate individual and team performance along the novice to expert training continuum. A key part of the technology required to provide a dynamic scenario modification capability is the capability to provide a realistic synthetic opposing force for the live fire and force on force training events. Advanced image projection technologies will be developed to provide this capability. In addition, the enhanced situational awareness from this technology provides a real time safety intervention capability during training events

Transitioned (Fielded) Systems

APM TTD has transitioned the Real Time Video Integration (Video Flashlights) Technology to the Range Modernization and Transformation (RMT) program of record. Video Flashlights are installed at Range 200 at the Marine Corps Air Ground Combat Center (MCAGCC) 29 Palms, CA and at the Marine Corps Security Force (MCSF) Battalion live fire training facility in Chesapeake, VA.

Language and Culture Training Technology

The USSOCOM sponsored Special Operations Forces Teletraining System (SOFTS) is being developed to enhance foreign language training capability. The objective of the SOFTS is to provide a PC-based collaborative learning environment that delivers synchronous distance learning language training to Soldiers, Sailors, Airmen and Marines at any location where they have access to broadband Internet services.

The USSOCOM sponsored Tactical Language and Culture Training System (TLCTS) is being developed to enhance tactical language and culture training capability. The objective of the TLCTS is to provide a PC-based, scenario-oriented training tool for foreign-language impaired students that delivers a usable grasp of culture, gestures, and situational language for various missions and areas of interest. The Tactical Iraqi software, user's manual and associated training support materials are currently available for all Marines with a *.mil email address at the Tactical Language Training, LLC support web site: http://www.tacticallanguage.com/Support/ . Tactical Pashto and Tactical French are currently under development.

These projects greatly enhance the USMC's and DoD's capability to provide the foreign language and culture training required to fight and win the Global War On Terror (GWOT).

Instructional Systems Development

Mr. Bill Franklin
Assistant Program Manager for
Instructional Systems Development

Mission: To provide Instructional Systems Development support to Marine Corps organizations as requested.

Military instructional systems require determination of instructional needs and priorities, to develop effective and efficient solutions to achieving these needs, and to implement these solutions in a competent manner, and to assess the degrees to which the output of the system meets the specified needs. The Instructional Systems Development (ISD) model summarizes approved techniques and procedures to be followed in the development and conduct of interservice training. The ISD model was adopted by the Marine Corps as its Systems Approach to Training (SAT) model for use in developing and conducting all Marine Corps training and education. Whether referred to as ISD or SAT, this model is a recognized standard governing the instructional process in the private sector and within the Department of Defense (DoD).

To provide Instructional Systems Development services to support PM TRASYS and other Marine Corps sponsors, the PM TRASYS Assistant Program Manager (APM) for ISD employees qualified Instructional Systems Specialists to analyze, design, develop, implement and evaluate instructional products that support Marine Corps training systems.

Analysis Phase

During the analysis phase, various forms of analyses are required to determine training needs and training tasks. These Front End Analyses (FEAs) provide customers with a structured plan for the designing effective training solutions. Possible products provided in the Analysis Phase include:

- Training Systems Acquisition Planning Documentation
- Manpower Personnel and Training Plans
- Training Situation Analyses
- Job Analyses
- Tasks Analyses
- Similar Systems Analyses

Design Phase

During the Design Phase, the training system is defined and documented in greater detail. Products that can be provided during this phase by the APM ISD are:

- Learning Objectives
- Objectives Hierarchy
- Individual Training Standards
- Media Analyses Documents
- Training Device Requirements Documents
- Training System Facilities Specifications
- Courseware Design Strategy Documents
- Lesson Strategy Documents
- Courseware Logic Flow Diagram

Development Phase

During the development phase, the training system is constructed and prepared for delivery to the user. Possible produces provided by the APM ISD during this phase are:

- Updated Manpower Personnel and Training Plan
- Training Course Data
- Learning Content Management Systems
- Script/Storyboards
- On-screen Development
- Training System Test Packages
- Training System Implementation Plan

Implementation Phase

This phase includes preparation for, and the actual conduct of, instruction according to the plan produced during the Development Phase. During this phase the APM ISD can provide assistance to the training system developer to ensure that the Training System Plan meets appropriate Marine Corps standards and guidelines.

Evaluation Phase

This phase provides procedures for measuring the effectiveness of the instruction in meeting the stated

learning objectives. It also provides feedback on the efficiency of the instructional program. The APM ISD can provide expert assistance to customers with planning and execution of Training System evaluation initiatives.

Current Initiatives

APM ISD is currently conducting Manpower Personnel and Training Analyses, Job Tasks Analyses for MARCORSYSCOM and TECOM. We are also assisting other PM TRASYS APMs with Front End Analyses for non-standard Training Systems and Manpower Personnel and Training Plans for non-standard Training Systems.

The APM ISD provides representatives to several DoD and MARCORSYSCOM working Groups including:

Visibility and Management of Operating and Support Costs (VAMOSC) Working Group.

VAMOSC is a management information system that collects and reports US Navy and US Marine Corps historical weapon system operating and support (O&S) costs. VAMOSC provides the direct O&S costs of weapon systems, some linked indirect costs (e.g., ship depot overhead), and related non-cost information such as flying hour metrics, steaming hours, age of aircraft, etc. VAMOSC has recently added the Personnel database which contains all Active Duty Navy and USMC personnel costs and attributes data.

Operating and Support Cost Analysis Model (OSCAM) Working Group.

OSCAM is a joint US/UK program providing rapid assessments of the O&S costs of high cost capital assets and their component systems. Using System Dynamics, OSCAM represents the business processes that drive costs and their relationship to management policies in order to assess the impact of alternative maintenance strategies and operating policies on the cost and availability of these assets.

Defense Training Standards Working Group (DTSWG).

DTSWG has training experts from each of the Services plus industry and academia who work together to develop and maintain performance specifications and guidance documents for acquisition and development of education and training programs in the Department of Defense.

Marine Corps Systems Command Instructional Systems Specialist Forum.

This forum brings Marine Corps Systems Command Instructional Systems Specialists together to map the future of training development for weapons systems fielded by the commands Product Groups. The Major focus of this group is the Marine Corps' Manpower Personnel and Training Process and how that process interacts with Headquarters Marine Corps, Marine Corps Combat Development Command, and Fleet training customers.

APM ISD also provides training expertise to the Marine Corps Systems Command Integrated Logistic Assessment and Milestone Review Processes. We provide representatives to these reviews as required insuring that training system development and support is adequately addresses for the Commands Weapons Systems Procurements.

Marine Reserve Liaison

LtCol Julio Villalba
Marine Reserve Liaison Officer

Mission: To provide and facilitate the development, procurement, fielding and maintenance of training solutions to The Marine Corps Reserves.

Organization

The Reserve Liaison Office serves as the main entry point for the Marine Corps Reserve Component to PM TRASYS. This office was established in April 2004 in response to training requirements that the Marine Corps Reserves experienced in support of the Global War on Terrorism. The office works in direct support to the Commander of Marine Forces Reserve (MFR) and the G3 Training AC/S located in New Orleans, LA. The Reserve Liaison Officer in conjunction with the Assistant Program Mangers (APM) for PMTRASYS currently supports training systems at 185 remote Inspector - Instructor, Reserve Centers throughout United States. This office reviews approved training requirements and oversees the development of training systems to Reserve units.

In addition, Program Manager Training Systems in coordination with Marine Corps Systems Command Reserve Affairs sponsors the Mobilization Training Unit Florida - 4 and Individual Marine Augment program. This is a MFR administrative program comprised of enlisted (sergeant and above) and officers who work on programs as Subject Matter Experts and system analysts testing and evaluating Tactical Decision-making Simulations. This unit has also provided services that include deployment of reserve personnel in support of PM TRASYS and MARCORSYSCOM with OIF /OEF requirements.

Services that the MFR liaision office provides or supervises include:

- Requirements Analysis / Review
- Manpower & Personnel Analysis
- Contracts Support
- Training System Support Equipment
- Direct Engineering Support
    - Technical Data & Publications
    - Data Management
    - Software
    - System Design
    - Facilities engineering (planning / preparation)
    - Testing and Installation
- Procurement
- Training/Education Support for Training Systems
- Liaison to Military Procurement Offices (Army, Navy, Air Force)
- Industry Liaison
- Handling, Storage & Transportation
- Life Cycle Support / Planning
- Inventory Management
- Budget and Financial Management
- Maintenance Planning
- Supply Support
- Tactical Decision-making Simulation Support
- Minor Training Devices Support

The current operational tempo that the Reserve component has experienced in the last four years has increased the demand for training and expanded the number of training resources required to sustain individual and unit readiness in FY 05 and 06. This increase demand continues into FY 07 due to mission requirements and Marine Corps Reserve demographics. This environment has moved units to seek alternate methods of training for individual Reserve Marine, units and staffs. The below - following systems are procurements that the Reserve Component has made in the last two Fiscal cycles or capabilities being researched for future development.

Indoor Simulated Marksmanship Trainer - Enhanced (ISMT-E/XP)

The Reserve Component currently has 175 ISMT Systems of which 53 are the ISMT-XP. The remaining legacy systems are scheduled to be upgraded to the XP version in FY 07/08. This interactive audio/video system provides weapons marksmanship training, employment, and tactical decision-making training. Depending on the configuration, this system is able to accommodate 4 to 15 Marines. The system can also provide forward observer, forward air controller, and indirect fire training.

Medium Tactical Vehicle Replacement - Operator Driving Simulator (MTVR-ODS)

The MTVR-ODS vehicle simulator is a virtual training system that provides realistic MTVR or HMMWV driver skill training in diverse environments ranging from a normal day to harsh weather and difficult terrain. The simulation represents the dynamic response and visual perspectives interfacing with the available cab controls. MFR has procured one mobile training systems that is currently in operation with 6th Motor Transport Battalion, Red Banks, NJ and a fixed facility system located at Bulk Fuel Transportation Platoon, Las Vegas, NV. Additional mobile systems are anticipated with MFR units in Pennsylvania, Illinois, Florida, Washington, Oregon and Texas.

Virtual Combat Convoy Trainer - Marine (VCCT- M)

The VCCT-M is a mobile, self-contained and self-supporting trailer. This virtual simulation system was developed to train Marines in basic and advanced combat convoy skills using variable terrain and roads in a variety of weather, visibility and vehicle operational conditions. The system includes a HMMWV mock-up, small arms weapons, crew served weapons and utilizes a 360 degree wrap screen. The VCCT has been in operation with MFR since the 2nd quarter of FY05 with the initial purchase of one VCCT-M suite (4 trailers). This system is currently at Camp Wilson, 29 Palms, CA. This system has also been utilized to provide training to infantry and artillery units at Seal Beach, CA and Alameda, CA. MFR also has the VCCT-M half suite (2 trailers) that it received the first quarter of FY06. This mobile system performed training at Reserve locations in Massachusetts, New Jersey, Texas, California, Pennsylvania, Florida, Maryland and Virginia. As of November 2006, these combined systems have provided training for over 12,500 active and reserve Marines. Future upgrades will include the Reconfigurable Vehicle Simulator - VCCT in the 4th quarter of FY 07. Additional VCCT-M systems are also anticipated at Great Lakes, IL and Fort Worth, TX.

Call for Fire Trainer System

The Marine Corps Reserve is currently working with PMTRASYS and TECOM / TECHDIV on the development of a comprehensive call-for-fire sustainment trainer for forward observers and forward air controllers. The integrated program team is reviewing and working to leverage existing technology within the DOD and industry to help fulfill this need. Research and analysis for a training solution will continue in FY07.

Combat Vehicle Training System (CVTS)

CVTS provides the ability to train M1A1, AAV and LAV-25 crew members to the approved standards of combat skills and readiness. This system is a high-fidelity, networked training system supporting individual, collective and combined arms. It will support gunnery proficiency, weapons platform familiarization, tactical training, target acquisition, identification, and engagement with the weapons appropriate for each platform. Instructor/operators are able to control exercise selection, observe crew member actions, and conduct after-action reviews.

- **CVTS-Advance Gunnery Training System -LAV**

  Delivery and installation of these systems will occur in the 2nd and 4th Qtrs of FY07. All systems will support 4th LAR Battalion, at Riverton, UT, Fort Detrick, MD, Syracuse, NY, Eastover, SC and Camp Upshur, VA.

- **CVTS- Advance Gunnery Training System -M1A1**

  These training capabilities currently exist with 4th Tank Battalion at Gowan Field, ID, Yakima, WA, Fort Knox, KY and Camp Pendleton, CA.

  Future system upgrades will include;

  a. Fire Power Enhancement (FY08)

  b. PC IG & Database Package

  c. (2) Mobile PAAR to Pendleton and Knox (3rd Qtr FY07)

  d. Deployable AGTS Production/Delivery (FY08)

  e. 50 cal thermal sight upgrades (1st Qtr FY07).

- **CVTS- Advance Gunnery Training System -AAV**

  One system is in operation at 4th AABN in Tampa, FL. Projected installations of systems with 4TH AABN are projected at Norfolk, VA, Galveston, TX, Gulfport, MS, and Jacksonville, FL.

Tactical Decision Simulation & Combat Decision Ranges

The USMC family of Tactical Decision-making Simulations provides cognitive skills training based commercial gaming technology for individual Marines, small units and MAGTF Staffs. This laptop/desktop capability provides affordable training for Marines anytime and anywhere. The training methodology of a TDS involves a three-phased approach; Conduct planning based on the Operation Order provided in the scenario, Execute the plan in the simulation, and Conduct an After Action Review.

These simulations included:

- Close Combat Marine
- TacOps Marine Corps
- Combat Decision Range
- MAGTF XXI
- Logistics TDS
- ROC-V

Since FY04 TTECHDIV and PMTRASYS has distributed 510 CD Suites to MFR units that also included "train-the-trainer" courses.

AAV Turret Trainer

The AAVTT is a stand-alone trainer that utilizes a surplus AAV turret and ISMT weapons (M-2 and MK-19) to provide individual, crew, and section gunnery training. The system consists of instructor operator station, driver station, AAV computers and simulation software, and intercom system. Fielding plan for 1st and 2nd quarter of FY07 include; 4TH AABN, Norfolk, VA, Galveston, TX, Gulfport, MS, Tampa, FL and Jacksonville, FL.

Learning Resource Center (LRC) / Deployable Learning Resource Center (DLRC)

Deployable Learning Resource Centers and Learning Resource Centers provide Marine units COTS hardware and software computer suites that support computer-based training, distance learning, local and/or wide-area network wargaming, Tactical Decision-making Simulation training. Fielded systems comprise of one DLRC and One LRC at MFR New Orleans, LA. Future suites are projected at Texas and Illinois locations.

Marine Force Reserve - Integrated Training Capability (MFR-ITC)

MFR has an emerging requirement to access, link and integrate many existing training, education, simulation, and war-gaming capabilities across the many Reserve Units. An additional requirement is to create a usable link for the Reserve Marines, when not on duty, to access this capability from their home or work. MFR has conceptualized an integrated networked anytime, anyplace capability that will enable Reserve Forces to efficiently plan, schedule, coordinate, collaborate and execute current and future technology-based USMC training capabilities.

Marine Aviation Liaison

LtCol Edwin Coyl
Marine Aviation Liaison

Mission: To facilitate total life-cycle acquisition support of Marine Corps aviation training systems in order to satisfy the aviation training requirements of the Marine Corps.

Overview

The Aviation Liaison Division resides within the NAVAIR, Orlando Training Systems Division (NAVAIR, Orlando-TSD) Program Directorate for Aviation, and is co-located with the PM TRASYS in Orlando, Florida. Liaison team members work in an Integrated Product Team (IPT) environment to coordinate fleet requirements with the acquisition community [Naval Air Systems Command (NAVAIRSYSCOM) and MCSC].

The Aviation Liaison Division's focus regularly expands and evolves in response to the goals and objectives outlined in the Department of Defense Training Transformation Implementation Plan and Marine Aviation Training Transformation Policy Letter. The division is ideally situated to manage the growth, integration and interoperability of USMC aviation training assets with the USMC ground training element and sister services in response to Joint National Training Capability (JNTC) initiatives, specifically a globally networked training environment, seamlessly linking ranges and simulation centers. The Distributed Mission Operations (DMO) capability will allow warfighters to train as they would fight, ensure training system interoperability, and to maintain combat readiness. As training continues to evolve, particularly with respect to integration of Live, Virtual, and Constructive elements, our goal is to coordinate and manage the various aviation training systems in order to prepare the Marine Air Ground Task Force for success in tomorrow's battlespace.

Aviation Training Systems Program (ATSP)

The ATSP concept has been developed under direction of the Deputy Commandant for Aviation (DC/A) to institutionalize integrated training support to the fleet and will encompass aircrew, aviation maintenance, and aviation command and control training. The goal of the ATSP is risk reduction during individual and unit training. This is accomplished by daily focused attention on established operational safety programs and processes and through development of a standardized end-to-end aviation training continuum from new accessions through Level IV master technician and senior combat flight leadership designations.

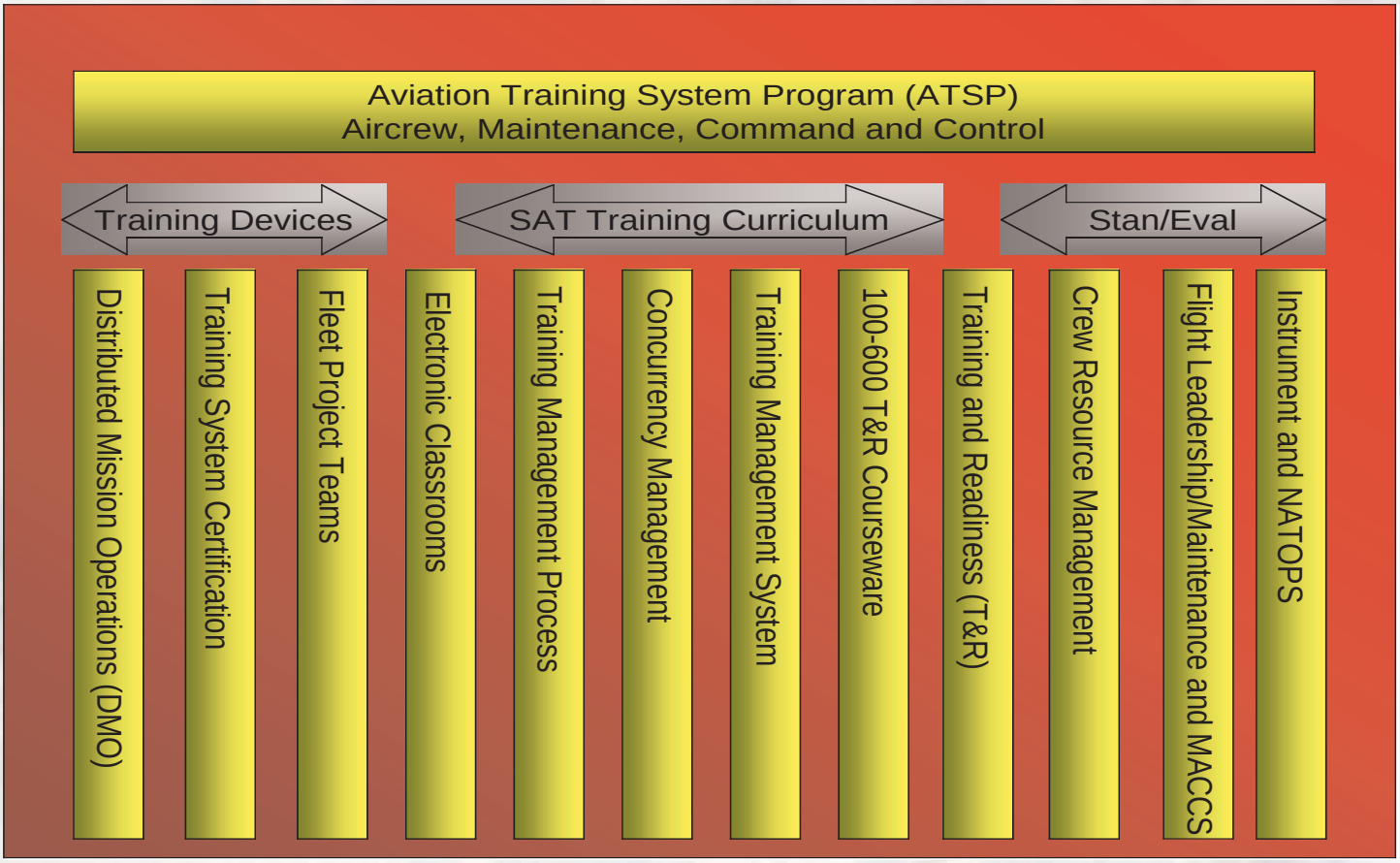
The ATSP is the overarching aviation training program that integrates policy, manpower, equipment and fiscal requirements for all Marine aviation officer and enlisted training.

The ATSP links the entire aviation training continuum through three core elements; Systems Approach to Training (SAT) curriculum development, Standardization and Evaluation, and Training Device configuration and standardization.

(a) **Training Devices.** Training devices are built and maintained to the type/model/series (T/M/S) current configuration and curriculum standard. They include all devices built to support the Aircrew, Maintenance, and MACCS curriculums. Per the Marine Corps Aviation Plan all aircrew-training devices will be maintained in accordance with the Marine Corps Aviation Simulator Master Plan (MCASMP) and the Naval Aviation Simulator Master Plan (NASMP) for FA-18 and EA-6B simulators.

1 **Distributed Mission Operations (DMO)**. DMO is the networking of simulators within Marine Aviation and out to the Joint environment. It provides the capability to conduct unit level to MAGTF and Joint level simulated training. In the context of ATSP, DMO will include both aircrew and MACCS training and be capable of linking to ground unit simulation exercises.

2 **Training System Certification**. Training system certification is a periodic review of training system capabilities. It is conducted to ensure the aviation training system and devices are capable of providing the fidelity necessary to properly train to T/M/S T&R simulation events. Annual training system certification will be conducted on all aircraft simulators and training support personnel and materials. This will be managed by PMA-205 and supported by Fleet Project Team (FPT) representatives. This action also serves as a validation of the concurrency management process with reference to courseware and curricula products as well as a measure of PMA performance in



funding training system and device modifications and upgrades.

3 **Fleet Project Teams (FPT)** The FPT is composed of platform/community Subject Matter Experts (SME) that provide qualitative and quantitative input during the design, development, acquisition, acceptance and life-cycle support of aviation training systems. In this capacity, FPTs act in cooperation with the acquisition program manager at specific points in the development to ensure the expected training system's performance supports training requirements.

4 **Electronic Classroom** Electronic classrooms will provide the computer and audio/visual assets required to instruct FRS student and fleet populations. In addition, sufficient classified and unclassified web access will be provided to ensure access to required training materials.

(b) **System Approach to Training (SAT) Curriculum** A SAT curriculum is based on Instructional System Design (ISD) processes. A SAT derived curriculum utilizes the "ADDIE" model (Analyze, Design, Develop, Implement and Evaluate) to develop an enhanced Master Task List (MTL). The MTL includes all required tasks to accomplish a platforms mission set. SAT based curricula along with other ATSP initiatives (Concurrency Management (CCM), Training System Certification, Standardization, Courseware Maintenance and Review) will determine the method of applying SAT across the entire training system in order to better define the following: appropriate training device or medium, training device fidelity, training frequency, courseware and level of courseware interactivity. In addition to training methods and efficiencies, SAT curriculum links individual training events to high-level Marine Corps Task List (MCTL) and Unified Joint Task List (UJTL) requirements, tying costs to readiness.

1 **Training Management Process (TMP)** The TMP is the mechanism designed to ensure operational force/user validation and prioritization of training issues affecting the various T/M/S and community curriculums. In addition, the TMP can be used to validate CCM driven changes to the curriculum and therefore the T&R manuals. The TMP is divided into Training Management Teams (TMT), ATS Integration Group, Advisory Group, and Executive Group and is the process which provides user validation and prioritization to those changes that affect curriculum. TMTs provide detailed training system issues to their respective platform Operational Advisory Group (OAG), Executive Steering Committees, and PMA-205.

2 **Concurrency Management (CCM)** Concurrency management is a continuous process by which curriculum, training devices, and courseware are kept current with a platform or mission. It allows changes (aircraft, mission, tactics, etc.) to be rapidly evaluated for impact to the training system. In addition, the CCM process provides the resource sponsor and acquisition

authority with the true cost of proposed system changes or upgrades. Concurrency management is a required process within the ATSP and helps ensure the fidelity and relevance of its training systems. CCM will occur through the Training Management Process.

3 **Training Management System (TMS)** The TMS provides for web-based management of curriculum, courseware and qualifications. The TMS will also support aircraft, device and classroom scheduling, training device status and reporting and electronic training jackets and logbooks. The TMS will maintain all training information, provide readiness reports and draw relevant information from other information management resources. The TMS will ensure that training is administered in accordance with appropriate training documents, currency requirements are met and Operational Risk Management is performed.

4 **100-600 T&R Courseware** SAT curriculum will determine community courseware requirements to include courseware level of interactivity. Courseware development, as set forth by the individual communities through the Training Management Process, will be managed by the Marine Federation within PMA-205. Courseware revision capability will occur at the FRS for the 100 level materials and at MAWTS-1 for 200-600 level materials.

5 **Training and Readiness (T&R)** T&R manuals are the backbone of daily operational force training and provide unit training officers/SNCO's with specific performance standards to effectively train and evaluate their units' personnel. By its nature a SAT curriculum is the basis for a community's T&R manual. To ensure compatibility and standardization across all ATSP commodity areas, maintenance occupational fields 59, 60, 61, 62, 63, 64, and 65 will transition from Individual Training Standards System (ITSS) MATMEP to a T&R Individual Training Standard.

(c) **Standardization and Evaluation** The standardization and evaluation portion of ATSP will provide for flight leadership to include: Section Leader, Division Leader, and Flight Leader/Mission Commander designations. This will also include Instrument evaluations and NATOPS qualifications ensuring a common standard thereby eliminating community/platform/locality stovepipes. Additionally, it will provide for standardized maintenance and MACCS qualifications, certifications and periodic training. To the maximum extent possible, training devices will be utilized to conduct NATOPS and Instrument evaluation flights which should be conducted by Contract Instructors (CI). To ensure standardization all aviation instructors and aircrew designated in a flight leadership role will receive an ATSP developed Instructor Training Standardization course.

1 **Crew Resource Management (CRM)** Crew Resource Management principals are imbedded seamlessly into SAT curriculum. In addition CRM principals will be included in student and instructor training materials and will be coordinated with Navy CRM School. CRM evaluations will be conducted for each training event through the means of a training event electronic Aircrew Training Form (ATF). This will allow CRM data to be evaluated and used as a pro-active tool for action by leadership.

2 **Flight leadership, Maintenance and MACCS certifications** Qualifications, certifications and designations, outside of MAWTS-1 certifications, will be standardized and evaluated across communities. The baseline requirements for the various communities will be stated in the Training and Readiness Manuals.

3 **Instrument and NATOPS instruction and evaluation** NATOPS standardization will remain with the community FRS. Common instrument instruction will be standardized and disseminated across Marine Aviation. Through the MATSS, individual communities will standardize specific instrument events for instruction by contract instructors. Instrument and NATOPS evaluations will occur in aircraft simulators and should be conducted by contract instructors to the maximum extent possible.

Fielded Marine Corps Aviation Training Systems

The PM TRASYS Aviation Liaison Division facilitates the development and fielding of USMC aviation training systems across the continuum of Air Combat Element (ACE) training needs. The Aviation Liaison Division works within the NAVAIR Training Systems Division, Orlando (NAVAIR Orlando) Program Directorate for Aviation in Orlando, Florida. Division members are members of the Aviation Training System - Transformation Task Force, which is tasked by the Deputy Commandant for Aviation to implement Marine Corps Aviation Training plans and policy as established in the Aviation Campaign Plan. The predominant role of the Aviation Liaison Division is to interface with and support fleet participation in aviation training system acquisitions. The following listing of Fielded Aviation Systems is provided with this document for information purposes only. The acquisition authorities for these aviation devices are: NAVAIR PMA-205 and NAVAIR Orlando.

AH-1W Weapon System Trainer (WST), Device 2F136 (S/N 1&2)

The two AH-1W Weapons System Trainers are hydraulically operated six-degree-of-freedom full motion flight simulators. Each trainer consist of two domes housing the pilot and gunner stations separately, and contains separate motion systems, instructor stations, computer systems, and independent flight controls.

The AH-1W Weapons System Trainer (WST) is suitable for all basic and advanced pilot/gunner training as defined in the T&R syllabus. Training capability includes all normal and emergency procedure operations in day, night, instrument, and NVG environments. Full weapons and tactics training are accomplished using current real world air and ground threats. The pilot or gunner may train individually, at the same time on separate missions, or simultaneously on one complete mission.

Location: MCAS New River, NC and MCAS Camp Pendleton CA.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AH-1W Aircrew Procedures Trainer (APT), Device 2F170 (S/N 1,2,3)

The AH-1W APT is a non-motion device consisting of a cockpit assembly, an Instructor Operator Station (IOS), and a visual system. The device is housed in three (3) mobile units, MIL-VANs, complexed together to provide a complete simulation facility.

The APT provides an accurate simulated environment for the pilot and gunner in cockpit familiarization, engine operation, tactical navigation, weapons release, and operations utilizing both normal and emergency procedures. The IOS is located adjacent to the cockpit assembly.

Location: MCAS Camp Pendleton, CA, NAS Atlanta, GA, and HMLA Johnstown, PA.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

UH-1N Aircrew Procedures Trainer (APT), Device 2F175

The UH-1N APT non-motion trainer consists of a cockpit assembly, an Instructor Operator Station (IOS), and a visual system. The device is housed in two (2) mobile units, MIL-VANs, assembled together to provide a complete simulation facility. The IOS is located adjacent to the cockpit assembly. The APT provides an accurate simulated cockpit environment for the pilot and copilot in cockpit familiarization, engine operation, tactical navigation, and opera-

tions utilizing both normal and emergency procedures. A fully integrated Tactical Environment Network facilitates high-level networked training in a tactical environment, and allows it to interact with other trainers and the Marine Aviation Training Systems Squadron's Command Post, which was designed to support graduate level flight leadership exercise scenarios.
Location: MCAS New River NC.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

UH-1N Weapon System Trainer (WST), Device 2F161

The UH-1N WST is a hydraulically operated six-degree-of-freedom full motion flight simulators. The WST consists of a fully functional UH-1N cockpit for pilot and copilot training and an Instructor Operator Station. The UH-1N WST is capable of supporting normal operations and emergency procedures under day, night, and instrument conditions. The visual system supports NVD training, and the Tactical Environment Network (TEN) provides real time networked operation with other devices for advanced tactical training in a simulated threat environment.
Location: MCAS Camp Pendleton, CA.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando.

CH-53D Helicopter Weapons System Trainer (WST), Device 2F121

The CH-53D (WST) is a hydraulically operated six-degree-of-freedom full motion flight simulator. The device consists of a fully functional cockpit for training both the pilot and copilot, and contains an Instructor Operator Station (IOS) for managing training events. This is the only CH-53D representative flight simulator available to the CH-53D community. A recent upgrade added an electronic control loader for precision flight control performance, a full dome-on-motion visual display that allows day, night, FLIR, and night vision goggle operation for both pilots, a Tactical Environment Network for tactical interplay and networking, and an upgraded Aviation Survivability Equipment suite.
Location: MCB Kaneohe Bay, HI.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

CH-53E Helicopter AircrewProcedures Trainer (APT), Device 2F171

The CH-53E Aircrew Procedures Trainer is a non-motion simulator capable of supporting aircraft normal operations and emergency procedures training under day, night, and instrument conditions. The device consists of a fully functional cockpit and contains an Instructor Operator Station (IOS) for managing training events. The visual system supports NVD training, and the Tactical Environment Network (TEN) provides real time networked operation with other devices for advanced tactical training in a simulated threat environment. In the absence of motion, aural and acoustic seat shakers provide audio and vibration cues to help simulate a more realistic flight environment. The 60 X 200 degree panorama display provides both pilots with a realistic out the window perspective to facilitate Cockpit Resource Management (CRM) training.
Location: MCAS Futenma, Okinawa, Japan.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

CH-53E Helicopter Weapons System Trainer (WST), Device 2F174 (S/N 1&2)

The CH-53E WSTs are hydraulically operated six-degree-of-freedom full motion flight simulators. Each WST consists of a fully functional CH-53E cockpit for pilot and copilot training and an Instructor Operator Station. The CH-53E WST is capable of supporting normal operations and emergency procedures under day, night, and instrument conditions. The visual system supports NVD training, and the Tactical Environment Network (TEN) provides real time networked

operation with other devices for advanced tactical training in a simulated threat environment.
Location: MCAS Miramar, San Diego, CA and MCAS New River, Jacksonville, NC.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando.

CH-53E Helicopter Aircrew Procedures Trainer (APT), Device 2F190

The CH-53E Aircrew Procedures Trainer is a non-motion simulator capable of supporting aircraft normal operations and emergency procedures training under day, night, and instrument conditions. The device consists of a fully functional cockpit and contains an Instructor Operator Station (IOS) for managing training events. The visual system supports NVD training, and the Tactical Environment Network (TEN) provides real time networked operation with other devices for advanced tactical training in a simulated threat environment. In the absence of motion, aural and acoustic seat shakers provide audio and vibration cues to help simulate a more realistic flight environment. The 60 X 220 degree panorama display provides both pilots with a realistic out the window perspective to facilitate Cockpit Resource Management (CRM) training.
Location: MCAS New River, NC.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

CH-46E Helicopter Aircrew Procedures Trainer (APT), Device 2F172

The CH-46E Aircrew Procedures Trainer is a non-motion simulator capable of supporting aircraft normal operations and emergency procedures training under day, night, and instrument conditions. The device consists of a fully functional cockpit and contains an Instructor Operator Station (IOS) for managing training events. The visual system supports NVD training, and the Tactical Environment Network (TEN) provides real time networked operation with other devices for advanced tactical training in a simulated threat environment. In the absence of motion, aural and acoustic seat shakers provide audio and vibration cues to help simulate a more realistic flight environment. The 60 X 200 degree panorama display provides both pilots with a realistic out the window perspective to facilitate Cockpit Resource Management (CRM) training.
Location: MCAS Futenma, Okinawa, Japan.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

CH-46E Helicopter Weapons System Trainer (WST), Device 2F173 (S/N 1&2)

The CH-46E WSTs are hydraulically operated six-degree-of-freedom full motion flight simulators. Each WST consists of a fully functional CH-46E cockpit for pilot and copilot training and an Instructor Operator Station. The CH-46E WST is capable of supporting normal operations and emergency procedures under day, night, and instrument conditions. The visual system supports NVD training, and the Tactical Environment Network (TEN)
provides real time networked operation with other devices for advanced tactical training in a simulated threat environment.
Location: MCAS Miramar CA, MCAS Camp Pendleton, CA.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

CH-46E Helicopter Aircrew Procedures Trainer (APT), Device 2F191

The CH-46E Aircrew Procedures Trainer is a non-motion simulator capable of supporting aircraft normal operations and emergency procedures training under day, night, and instrument conditions. The device consists of a fully functional cockpit and contains an Instructor Operator Station (IOS) for managing training events. The

visual system supports NVD training, and the Tactical Environment Network (TEN) provides real time networked operation with other devices for advanced tactical training in a simulated threat environment. In the absence of motion, aural and acoustic seat shakers provide audio and vibration cues to help simulate a more realistic flight environment. The 60 X 220 degree panorama display provides both pilots with a realistic out the window perspective to facilitate Cockpit Resource Management (CRM) training.
Location: MCAS New River, Jacksonville, NC
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

VH-3D Helicopter Aircrew Procedures Trainer (APT), Device 2F180

The VH-3D APT is a non-motion simulator designed to train crewmembers throughout all aspects of the aircraft's assigned missions. The device consists of a fully functional cockpit for training the aircrew, and contains an Instructor Operator Station for managing training events. The VH-3D is only flown by the Presidential Support Squadron, HMX-1.
The VH-3D APT is a flight trainer capable of simulating all normal operations and emergency procedures in simulated day, night, instrument and night vision goggle environments. A fully functional cockpit provides training for both the pilot and copilot. In the absence of motion, aural and acoustic seat shakers provide audio and vibration cues to help simulate a more realistic flight environment. The instructor is physically located at the Instructor/Operator Station directly aft of the cockpit. The 150 X 55 degree panorama display provides aircrew with a realistic out the window perspective to facilitate Aircrew Coordination Training (ACT) and Cockpit Resource Management (CRM) training.
Location: MCAF Quantico, VA.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

VH-60N Helicopter Aircrew Procedures Trainer (APT), Device 2F181

The VH-60N APT is a non-motion simulator designed to train crewmembers throughout all aspects of the aircraft's assigned missions. The device consists of a fully functional cockpit for training the aircrew, and contains an Instructor Operator Station for managing training events. The VH-60N is unique in the Marine Corp inventory since it is only flown by the Presidential Support Squadron, HMX-1.
The VH-60N APT is a flight trainer capable of simulating all normal operations and emergency procedures in simulated day, night, instrument and night vision goggle environments. A fully functional cockpit provides training for the pilot, copilot, and the Communication Systems Officer (CSO). In the absence of
motion, aural and acoustic seat shakers provide audio and vibration cues to help simulate a more realistic flight environment. The instructor is physically located at the Instructor Operator Station directly aft of the cockpit. The 150 X 55 degree panorama display provides aircrew with a realistic out the window perspective to facilitate Aircrew Coordination Training (ACT) and Cockpit Resource Management (CRM) training.
Location: MCAF Quantico, VA.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

MV-22 Full Flight Simulator (FFS), Device 2F182

The MV-22 FFS simulates the MV-22B aircraft and is suitable for training all normal and emergency procedures. The three devices are networked and capable of training pilots and copilots in all aspects of flight to include multi-ship tactics in a simulated threat environment. The FFS is mounted on a 6 Degree of Freedom motion base with a secondary motion system to simulate the rotor vibrations felt by the aircrews. A fully integrated Tactical Environment Network facilitates high-level networked training in a tactical environment, and allows it to

interact with other trainers and the Marine Aviation Training Systems Squadron's Command Post, which was designed to support graduate level flight leadership exercise scenarios.
Location: MCAS New River, Jacksonville, NC.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

MV-22B Flight Training Device (FTD), Device 2F183

The MV-22 FTD simulates the MV-22B aircraft and is suitable for training all normal and emergency procedures. The device is networked and capable of training pilots and copilots in all aspects of flight to include multi-ship tactics in a simulated threat environment. The FTD has a secondary motion system to simulate the rotor vibrations felt by the aircrews. A fully integrated Tactical Environment Network facilitates high-level networked training in a tactical environment, and allows it to interact with other trainers and the Marine Aviation Training Systems Squadron's Command Post, which was designed to support graduate level flight leadership exercise scenarios.
Location: MCAS New River, Jacksonville, NC.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando.

KC-130J Aircraft Weapons System Trainer (WST), Device 2F199A

The KC-130J WST is a hydraulically operated six degree of freedom full-motion flight simulator. A fully functioning cockpit and augmented crew station provides training for pilots, copilots and crew chiefs. The device is capable of simulating normal and emergency procedures under day, night and instrument conditions. Both basic and advanced flight and mission tasks can be accomplished in the device. Additionally, NVG stimulation enables aircrew to utilize their own ANVIS-9 NVG's.
Location: MCAS Cherry Point NC
Acquistion Organization: Naval Aviation Systems Command (NAVAIR) PMA-205/NAVAIR Training Systems Division Orlando.

KC-130T Aircraft Aircrew Procedures Trainer (APT), Device 2F176

The KC-130T APT is a non-motion based system designed to provide realistic training in procedures, flight modes/conditions, and mission profiles of the KC-130T aircraft.
The KC-130T APT provides simulated training for Marine Corps pilots, flight engineers, and navigators in normal and emergency procedures in the KC-130T aircraft. In addition to the aircrew stations, the device has an Instructor Operator Station to manage training events. The panorama screen provides an out-the-window view for the aircrew, and the visuals support day, night, instrument and night vision goggle training. The device is networked with the other Okinawa flight simulators via the tactical environment network, and supports tactical training in a threat environment.
Location: MCAS Futenma, Okinawa, Japan.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

EA-6B (ICAP II) Operational Flight / Navigation Trainer (OFT), Device 2F143

Device 2F143 provides training, for the pilot and electronic countermeasures officers 1, in normal, abnormal, and emergency procedures involving all phases of flight, including takeoff and landing from carrier and land, and enroute flight of all types. The trainer also provides training in navigation skills for the pilot and electronic countermeasures officers 1. The EA-6B trainer is a fixed-base trainer designed for installation in a permanent-type military facility. The trainer
will provide training in the development of pilot and electronic countermeasures officers /copilot skills and techniques to efficiently operate the EA-6B aircraft.
Device 2F143 simulates the operational and performance characteristics of the EA-6B aircraft on the ground and throughout the flight envelope (including inflight refueling), recreating carrier takeoff and landing effects, realistic cockpit sounds, motion, visual scenes, instrument presentations, navigation and communication reception, and feel of the flight controls.

Location: MCAS Cherry Point NC
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

EA-6B Weapon System Trainer (WST), Device 2F178

The 2F178 is a deployable, self-contained, EA-6B, Block 89A, WST providing pilots and electronic countermeasures officers the ability to maintain a high state of proficiency in:
(a) Operating the aircraft and its subsystems
(b) Executing normal procedures
(c) Recognizing malfunctions and abnormal conditions
(d) Executing corrective and recovery procedures
(e) Executing mission procedures in a realistic tactical environment
The simulation training scenario presents pre-flight checks and conditions, multiple operations throughout the flight envelope and post flight procedures and debriefings. The Flight Station and Tactics Station can be used independently and concurrently, or combined for integrated training.
Flight Station (FS) - Supports training in: instrumentation, carrier launch and recovery procedures, take off and landing, climb out and approach, enroute flight, normal navigation, formation flight, refueling, low altitude visual navigation, and emergency procedures.
Tactics Station (TS) - Supports training in: emitter analysis and recognition, jammer assignments, HARM launch procedures, and emergency procedures.
Location: MCAS Iwakuni JA
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

EA-6B (ICAP II) Team Tactics Trainer, Device 15E22C

Device 15E22C provides introductory, proficiency, and refresher training for EA-6B ICAP II Electronic Countermeasures Officers. US Navy squadrons at NAS Whidbey Island, WA and US Marine Corps squadrons at MCAS Cherry Point, NC employ Device 15E22C in their EA-6B electronic countermeasures officers training programs. The device trains officers with varying levels of electronic warfare and ALQ-99 weapons system experience.
The trainee station is an accurate reproduction of the EA-6B ICAP II rear cockpit controls. All the controls used with the Tactical Jamming System (TJS) are fully operational. Trainees receive practical experience using the TJS in training exercises that employ scenarios of varying complexity.
Instructors are provided with a raised viewing platform behind the trainee station. The instructor station includes color graphic displays of scenario conditions and a function keyboard. The keyboard controls the training exercised displays and
the trainer mode. Scoring displays provide instantaneous and cumulative student performance information.
Location: MCAS Cherry Point NC
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Multi-Task Trainer (MTT), Device 15A23

The AV-8B Multi-Task Trainer is a portable desktop device, fast and easily assembled and disassembled. The Multi Task Trainer provides to AV-8B student pilots training capability in those aspects related to the operation of the Air-to-Ground and Air-to-Air modes of the APG- 65 Radar system. It provides classroom training capability in those aspects related to operation of the radar. Trainees should be previously familiar with general AV-8B flight characteristics.
The device simulates, AV-8B performance characteristics, with reasonable accuracy for up and away flight with respect to acceleration, deceleration, turning, climb, and descent. The system hardware includes the following: a flat panel upper display that depicts the visual scene with superimposed HUD; a flat panel lower display depicting the Multi Purpose Color Displays (MPCDs) and control area provided with touch panel; two Personal Computers (into a single desktop cabinet) with two graphics boards and internal UPSs; Real Hands On Stick And Throttle System (HOTAS); and, interfaces for HOTAS, Touch Panel system and auxiliary Keyboard and Mouse.
Location: MCAS Cherry Point NC, MCAS Yuma AZ.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Weapons System Trainer (WST), Device 2F149

Device 2F149 is used to train student pilots in AV-8B operational and tactical procedures. Operational procedures include: V/STOL and conventional take-off and landing, aircraft control and instrument flight procedures. Tactical procedures include: weapons delivery, low altitude tactics, offensive air combat maneuvering, and defensive electronic countermeasures. The WST is also used to reinforce training in normal/degraded/emergency operations of simulated aircraft systems.

Device 2F149 is installed in a multi-room training facility with a high bay area. Device 2F149 is grouped and located in adjacent rooms that include: Trainee Station, Instructor Operator Station, Computer Room, Debrief and Utility Room.

The trainee station includes a full size replica of the AV-8B crew station and a visual scene projection system. The crew station contains controls, indicators, and cockpit equipment required to perform the training mission. A flight control system simulates AV-8B flight control characteristics. A G-suit/seat, G-dimming, and buffet system simulates G-forces and motion cuing. An aural simulation system simulates the AV-8B crew station aural environment. A communications system simulates all COM/NAV capabilities.

Location: MCAS Cherry Point NC

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Night Attack Weapons System Trainer (WST), Device 2F150

Device 2F150 is used to train student pilots in AV-8B operational and tactical procedures in day and night environments. Operational procedures include: V/STOL and conventional take-off and landing, aircraft control and instrument flight procedures.

Tactical procedures include: weapons delivery, low altitude tactics, offensive air combat maneuvering, and defensive electronic countermeasures. The NAWST is also used to reinforce training in normal/degraded/emergency operations of simulated aircraft systems.

Device 2F150 is installed in a multi-room training facility with a high bay area. Device 2F150 is grouped and located in adjacent rooms that include: Trainee Station, Instructor Operator Station, Computer Room, Debrief Room and Utility Room.

The trainee station includes a full size replica of the AV-8B crew station and a visual scene projection system. The crew station contains controls, indicators, and cockpit equipment required to perform the training mission. A flight control system simulates AV-8B flight control characteristics. A G-suit/seat, G-dimming, and buffet system simulates G-forces and motion cuing. An aural simulation system simulates the AV-8B crew station aural environment. A communications system simulates all COM/NAV capabilities.

Location: MCAS Yuma AZ

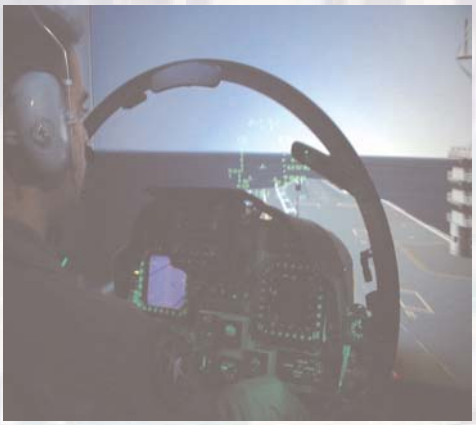
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Radar Night Attack Weapon System Trainer (WST), Device 2F150A

Device 2F150A is used to provide training in those unique skills and techniques involved in Vertical/Short Takeoff or Landing (V/STOL), basic aircraft control, instrument flight procedures, utilizing Air-to-Ground and Air-to-Air Weapons Delivery Modes of the AN/APG-65 Radar, Night Vision Goggles (NVG), Forward Looking Infrared (FLIR), Defensive Electronic Countermeasures, and normal/degraded/emergency mode operations for all AV-8B Plus Radar Night Attack Aircraft systems under day/dusk/night conditions. It provides synthetic training to complement airborne training in the development of pilot skills and techniques to effectively use the

aircraft to its full performance.
The Device 2F150A Radar Night Attack Weapon Systems Trainer (RNAWST) is intended to allow the pilots to obtain training associated with both basic and advanced flight and mission tasks and to operate the tactical and mission equipment, including avionics and weapon systems, within their full operating envelope in day and night modes of operation. NVG stimulation enables aircrew to utilize their own ANVIS-9 NVGs.
Location: MCAS Cherry Point NC
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Radar Night Attack Weapons System Trainer (WST), Device 2F150B



Device 2F150B is used to develop pilot proficiency in AV-8B Harrier II Plus, radar equipped aircraft operations in day and night environments. Operational Procedures include: VSTOL and conventional takeoff and landing, aircraft control and instrument flight procedures. Tactical procedures include weapons delivery, low altitude tactics, offensive air combat maneuvering, defensive electronic countermeasures, and AN/APG-65 radar operation. The RNAWST is also used to reinforce training in normal/degraded emergency operations of simulated aircraft systems.
Device 2F150B is installed in a multi-room facility with a high bay area. Device 2F150B is grouped and located in adjacent rooms that include: Trainee Station, Instructor Operator Station, Computer Room and Utility Room.
The trainee station includes a full size replica of the AV-8B Harrier II Plus crew station and a visual scene projection system. The crew station contains control indicators, and cockpit equipment required to perform the training mission. Crew station multi-purpose color displays provide simulated AN/APG-65 radar images. A flight control system simulates AV-8B Harrier II Plus flight control characteristics. A g-suited, g-dimming, and buffet system simulates g-forces and motion cueing. An aural simulation system simulates the AV-8B crew station aural environment. A communications system simulates all COM/NAV capabilities.
Location: MCAS Yuma AZ
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Radar Night Attack Weapon System Trainer (WST), Device 2F150C

Device 2F150C is used to provide training in those unique skills and techniques involved in Vertical/Short Takeoff or Landing (V/STOL), basic aircraft control, instrument flight procedures, utilizing Air-to-Ground and Air-to-Air Weapons Delivery Modes of the AN/APG-65 Radar, Night Vision Goggles (NVG), Forward Looking Infrared (FLIR), Defensive Electronic Countermeasures, and normal/degraded/emergency mode operations for all AV-8B Plus Radar Night Attack Aircraft systems under day/dusk/night conditions. It provides synthetic training to complement airborne training in the development of pilot skills and techniques to effectively use the aircraft to its full performance.
The Device 2F150C Radar Night Attack Weapon Systems Trainer (RNAWST) is intended to allow the pilots to obtain training associated with both basic and advanced flight and mission tasks and to operate the tactical and mission equipment, including avionics and weapon systems, within their full operating envelope in day and night modes of operation.
Location: MCAS Cherry Point NC
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Power Plants Systems Trainer, Device 11H93

The AV-8B Power Plant Systems Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Mechanic (MOS 6212). The trainer provides power plant maintenance, troubleshooting, and unscheduled corrective maintenance which involves identifying instructor inserted malfunctions/failures and removal/replacement of compo-

nents. The trainer simulates aircraft systems that are part of the power plant system. The trainer allows the instructor to insert any one of 43 software induced malfunctions relating to the engine system. The engine, as simulated on the trainer, responds to changes of atmospheric conditions, altitude and airspeed. The performance is also dependent of water injection and different bleed conditions caused by the vectored thrust of the engine nozzles, which are fully functional on the trainer. All fuel control adjustments are active and respond as the aircraft.

The AV-8B Power Plant Systems Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Avionics Systems Trainer, Device 11H94

The AV-8B Avionics Systems Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Communication / Navigation / Weapon Systems Technician (MOS 6312). The trainer provides avionics systems maintenance training including troubleshooting, and unscheduled corrective maintenance which involves identifying instructor inserted malfunctions/failures and removal/replacement of designated components within the AV-8B avionics. The trainer simulates aircraft avionics systems, which are modeled in a static condition (aircraft on ground, standard atmosphere, temperature, zero acceleration). A full mock-up of the fuselage including the cockpit and a tail module board containing a replica of the vertical fin, and system ground support equipment are provided as part of the student station to accomplish the training objectives.

The AV-8B Avionics Systems Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.

AV-8B Electrical / Cockpit Systems Trainer, Device 11H95

The AV-8B Electrical / Cockpit Systems Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Electrical Systems Technician (MOS 6332). The trainer provides electrical system maintenance training including troubleshooting, and unscheduled corrective maintenance which involve identifying instructor inserted malfunction/failure and removal/replacement of designated components within the AV-8B electrical systems. The trainer simulates the aircraft electrical system, lighting, AC/DC power generating and bus logic. A full lighting system including exterior lights, console lights, instrument lights and warning, caution and advisory lights are provided. The trainer has full engine run capability. A complete engine aural cue system is provided. All engine instrumentation, temperature limiting and water injection may be fully tested. Other systems include Inertial Navigation, Air Data Computer and Flight Reference. There are twenty-six door areas with more than eighty active electrical connectors, five hundred active test points and 112 malfunctions available for training.

The AV-8B Electrical/Cockpit Systems Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Electrical / Cockpit Systems Trainer, Device 11H95

The AV-8B Electrical / Cockpit Systems Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Electrical Systems Technician (MOS 6332). The trainer provides electrical system maintenance training including troubleshooting, and unscheduled corrective maintenance which involve identifying instructor inserted malfunction/failure and removal/replacement of designated components within the AV-8B electrical systems. The trainer simulates the aircraft electrical system, lighting, AC/DC power generating and bus logic. A full lighting system including exterior lights, console lights, instrument lights and warning, caution and advisory lights are provided. The trainer has full engine run capability. A complete engine aural cue system is provided. All engine instrumentation, temperature limiting and water injection may be fully tested. Other systems include Inertial Navigation, Air Data Computer and Flight Reference. There are twenty-six door areas with more than eighty active electrical connectors, five hundred active test points and 112 malfunctions available for training.

The AV-8B Electrical/Cockpit Systems Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Egress/Environmental Systems Trainer, Device 11H96

The AV-8B Egress / Environmental Systems Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Safety Equipment Mechanic (MOS 6048).
The trainer provides training on in cockpit maintenance, troubleshooting, and unscheduled corrective maintenance which involves identifying instructor inserted malfunctions/failures and removal/replacement of designated components within the AV-8B ECS, canopy, and ejection seat systems. The trainer simulates the aircraft systems that are part of the cockpit system. The trainer consists of a complete AV-8B cockpit with an operational but inert ejection seat, canopy and ladder, active forward Environmental Control System (ECS), On-Board Oxygen Generating System and Anti-G System. All of the Ground Support Equipment (GSE) and test equipment necessary for testing and troubleshooting are supplied and used as with the actual aircraft.
The AV-8B Egress / Environmental Systems Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina,.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Fuel Systems Trainer, Device 11H97

The AV-8B Fuel Systems Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Mechanic (MOS 6212) and Aircraft Electrical Systems Technician (MOS 6332). The trainer provides fuel system maintenance training including troubleshooting and unscheduled corrective maintenance which involve identifying instructor inserted malfunctions/failures and removal/replacement of designated components within the AV-8B fuel system.
The trainer simulates the aircraft fuel system in a static condition (aircraft on ground, standard atmosphere, temperature, zero acceleration). A full mockup of the forward fuselage (cockpit), fuel tanks, and module boards containing items found in other parts of the aircraft and system GSE are provided as part of the student station to accomplish the training objectives. The trainer is divided into five (5) major functional systems: power distribution, computation, real-time input/output (I/O), instructor display/control, and student station systems. The trainer demonstrates the operation, fault isolation, adjustment, and testing of the following fuel systems; fuel servicing, fuel pressurization and vent, fuel distribution, fuel jettison, and fuel quantity and level indications.
The AV-8B Fuel Systems Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Armament Systems Trainer, Device 11H98

The AV-8B Armament Systems Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Ordnance Technician (MOS 6231).
The trainer provides armament systems maintenance training including troubleshooting and unscheduled corrective maintenance which involve identifying instructor inserted malfunctions/failures and removal/replacement of designated components within the AV-8B armament system. The trainer simulates the aircraft armament system in a static condition (aircraft on ground, standard atmosphere, temperature, zero acceleration). A full mockup of the fuselage with left wing, cockpit and module board containing items found in other parts of the aircraft and ground support equipment are provided as part of the student station to accomplish the training objectives. The trainer is divided into five (5) major functional systems: power distribution, computation, real-time input/output (I/O), instructor display/control, and student station systems.
The AV-8B Armament Systems Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando.

AV-8B Flight Controls System Trainer, Device 11H99

The AV-8B Flight Controls System Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Structures Mechanic (MOS 6252) and Aircraft Electrical Systems Technician (MOS 6332).The trainer provides fuel system maintenance training including troubleshooting and unscheduled corrective maintenance which involve identifying instructor inserted malfunctions/failures and removal/replacement of designated components within the AV-8B flight control system. The trainer simulates the aircraft flight control system in a static condition (aircraft on ground, standard atmosphere, temperature, zero acceleration). A full mockup of the cockpit/ fuselage with left wing, and a ground support equipment module board containing items found in other parts of the aircraft are provided as part of the student station to accomplish the training objectives.

The AV-8B Flight Controls System Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

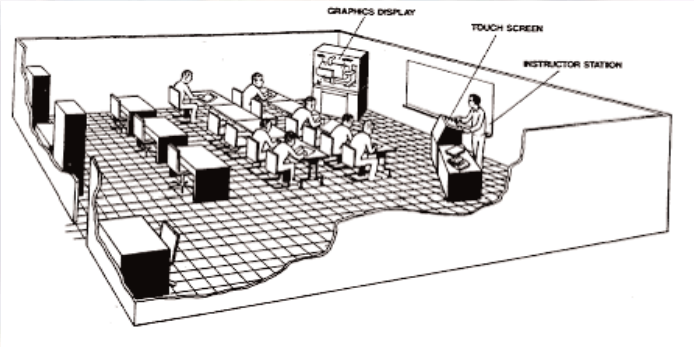
AV-8B Landing Gear System Trainer, Device 11H100

The AV-8B Landing Gear System Trainer provides instructor directed organizational "O" level maintenance training for Aircraft Mechanic (MOS 6212) and Aircraft Electrical Systems Technician (MOS 6332).The trainer provides landing gear system maintenance training including troubleshooting and unscheduled corrective maintenance which involve identifying instructor inserted malfunctions/failures and removal/replacement of designated components within the AV-8B landing gear system. The trainer simulates the aircraft landing gear system in a static condition (aircraft on ground, standard atmosphere, temperature, zero acceleration). A full mockup of the fuselage (cockpit), fuselage, and a module board containing system ground support equipment are provided, as part of the student station, to accomplish the training objectives.

The AV-8B Landing Gear System Trainers are located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

AV-8B Instructional Graphics Training, Device 11H156



The AV-8B Instructional Graphics Training Device assists the instructor in teaching AV-8B maintenance training. This device provides the instructional tools necessary to enhance the training environment for the AV-8B maintenance trainee and increases the ability of the instructor to demonstrate system operation dynamically for the accomplishment of physical tasks.

The current configuration of the device consists of CUM 166 (Day Attack Configuration), CUM 167 (Night Attack Configuration), CUM 234 (RADAR/Strike Attack Configuration), and CUM 236 (RADAR Attack Configuration). Device 11H156 consists of three configurations: Instructional Graphics Training Device; Instructor Graphics Review Station, Device 11H156/1; and Graphics Development Station, Device 11H156/2.

Device 11H156 consists of two basic units, an Instructor Station (IS) and the projection system utilizing a PROXIMA DP5900 projector. The IS is essentially a podium which houses an IBM-compatible Pentium II 350 MHz with a 17-inch touch screen monitor which the instructor uses to control the graphics being presented to the student on the associated projection system.

The AV-8B Instructional Graphics Training Device is located at NAMTRAMARUNIT, MCAS Cherry Point, North Carolina.

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

F/A-18 Weapons Tactics Trainer (WST), Device 2E7

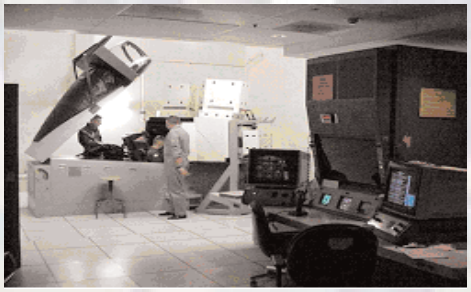
Device 2E7 is a dual training complex, consisting of two identical training areas and numerous supporting stations and consoles. Each training area consists of an actual F/A-18 cockpit mounted near the center of a large sphere. Simulated images of the sky, earth, targets, and gunfire are projected upon the inner surface of the sphere and are viewed by the trainee during the training exercise. During the training exercises, the trainee will utilize all flight and weapon controls of the cockpit. He will also experience all sights, sounds, accelerations, and buffets that would be encountered on an actual flight mission.

Training exercises are arranged and monitored by an instructor who has direct communication with the trainee(s) during the exercises. Independent or coordinated exercises are possible for two trainees. The trainees may aid or oppose each other in a coordinated exercise. Alternatively, either of both trainee(s) may oppose an instructor and/or a computer. Air-to-air combat training exercises are possible in any of the following three ways: trainee opposes a threat aircraft (1 on 1); trainee opposes two threat aircraft (1 on 2). The instructor has the capability to record the training exercises for later playback and discussion with the trainee(s). The playback may also be "frozen" at any time for detailed examination.

Location: MCAS Miramar CA, MCAS Beaufort SC

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

F/A-18 Operational Flight Trainer (OFT), Device 2F132



Device 2F132 is a computer-controlled trainer that faithfully simulates the operation and response of the F/A-18 aircraft flight controls, instruments, and systems, as well as its visual, aural, environmental, and motion sensations. Provides aircrew with cockpit orientation, normal and emergency procedures training, dusk/night visual and instrument takeoff and landing from carrier or airfield, and limited air-to-ground weapons delivery. The dusk/night visual display shows the surrounding carrier/airfield terrain throughout takeoff, maneuvers, and landing approach as a function of the aircraft attitude, altitude, and speed. Aural effects, such as engine turbine, engine nozzle, accessories, air conditioning turbine, and airflow also are simulated. An ejection seat shaker provides buffet simulation. A G-seat, used with a G-suit, provides motion cues. The trainer includes such automated instructional features as procedural sequence monitoring, preprogrammed insertion of malfunctions, dynamic replay, parameter recording, checkride and auto mission programs, and demonstration flights. The trainer also can provide had copy printouts for evaluating trainee performance.

Location: MCAS Miramar CA, MCAS Beaufort SC, MCAS Iwakuni, JA

Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

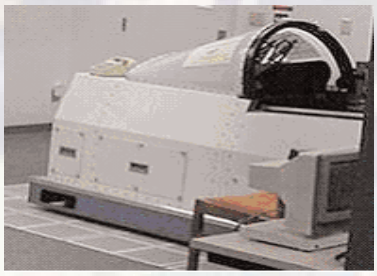
FA-18D Aircrew Procedures Trainer (APT), Device 2F192

The F/A-18D APT is a multi-purpose trainer that is configured as an F/A-18D Advanced All Weather Night Attack Fighter aircraft. It is designed to provide cockpit familiarization for the pilot and Weapons & Sensors Officer (WSO), in-flight normal and emergency procedures, and advanced mission oriented training. In addition, the F/A-18D APT provides a capability to evaluate and test pilots and WSO's, and enables them to interact during normal and emergency operations. The APT includes a full range of navigational flight instruments, day and night flight capability in a variety of weather/environmental conditions, survival equipment, and weapon delivery capabilities that simulate the aircraft.

The F/A-18D APT provides training in the following areas: aircraft ground and airborne systems operations, limited Air Combat Maneuvering (ACM), Air-to-Air Weapons Delivery, Radar Imagery, Radar Warning System Operation, Aircraft Control, Normal/Emergency procedures, Air-to-Ground (A/G) Weapons Delivery with associated A/G Sensors Video, and Targeting Forward Looking InfraRed (FLIR). Performance simulation is provided for air-to-air and air-to-ground weapons. The aircraft and weapons are dynamically and computationally related

to each other so that the pilot and WSO see an accurate visual simulation of targets, and weapons deployment.
The F/A-18D APT will be interoperable with the CH-53E APT Device 2F190 and the CH-46E APT Device 2F191 to provide integrated tactical training. In the Integrated Mode, the APT devices will be capable of collaborative training via the Marine Corps supplied Tactical Environment Network (TEN).
Location: MCAS Iwakuni, JA
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

F/A-18 Part Task Trainer (PPT), Device 15C13



Device 15C13 is a PPT for the F/A-18 aircraft. To provide orientation, familiarization with the "Hands-On-Throttle-And-Stick" (HOTAS) controls, limited radar intercept geometry and an introduction to the basic capabilities of the combined use of HOTAS, the Up Front Control (UFC), the Master Monitor Display (MMD), the Multi-Function Display (MFD), the Electronic Horizontal Situation Indicator (EHSI), the Heads Up Display, and the armament panel.
Location: MCAS Miramar, CA
Acquisition Organization: Naval Aviation Systems Command (NAVAIR) PMA-205 / NAVAIR Training Systems Division Orlando

MARINE CORPS SYSTEMS COMMAND
Program Manager Training Systems
12350 Research Parkway
Orlando, FL 32826-3275

Phone: 407-381-8762
Fax: 407-381-8807
Email: pmtrasys@usmc.mil
Website: www.marcorsyscom.usmc.mil, select "TRASYS"